REPORTS AND DOCUMENTS

CONNECTED WITH

THE PROCEEDINGS

OF THE

EAST-INDIA COMPANY

IN REGARD TO

THE CULTURE AND MANUFACTURE

OF

COTTON-WOOL,

RAW SILK, AND INDIGO,

IN

INDIA.

LONDON:

PRINTED BY ORDER OF THE EAST-INDIA COMPANY.

21st Dec. 1836

Printed by J. L. Cox and Sons, 75, Great Queen Street,
Lincoln's-Inn Fields.

REPORT

OF THE

PROCEEDINGS OF THE EAST-INDIA COMPANY

IN REGARD TO THE

PRODUCTION OF COTTON-WOOL.

REPORT.

THE importance of endeavouring to obtain a supply of good Cotton-wool from the East-Indies, for the use of the Manufacturers of Great Britain, appears to have become a subject of public attention about the latter part of the eighteenth century. The great inventions which had taken place, and the improvements which had been effected in the various kinds of machinery for spinning and weaving, as well as in the arts of bleaching and calico-printing, from the first introduction of Arkwright's patent spinning-machine in 1769 to the establishment of the factory system about the year 1785, occasioned a constantly increasing demand for the raw material, and increased means of supplying it were consequently sought.*

The

* The rise, progress, and state of the culture and manufacture of cotton, may be seen in several modern publications; particularly

Report.

The casual importations of this article of commerce from the western coast of India, by the East-India Company and their officers, had previously been inconsiderable. The provinces under the Company's government did not, indeed, afford a sufficient quantity of cotton for the demands of the native weavers, who were accustomed to obtain large supplies from districts beyond the Company's frontier.

The total importation of cotton into Great Britain in the year 1786 was derived from the under-mentioned places, and in the proportions here stated :—

	lbs.
From British West-Indies	5,800,000
French and Spanish Colonies	5,500,000
Portuguese Colonies	2,000,000
Dutch Colonies	1,600,000
Smyrna and Turkey	5,000,000
	19,900,000
Exported	323,000

The importation of the year 1789 was much greater, *viz.*

From

larly in the "History of the Cotton Manufacture in Great Britain," by E. Baines, junior, London 1835; and "The Cotton Manufacture of Great Britain investigated," &c. by Dr. Ure, London, 1836.

		lbs.
From British West-Indies ..	..	10,128,000
French, Spanish, and Portuguese Colonies ..		14,300,000
Dutch Colonies ..	..	1,300,000
Smyrna and Turkey ..	..	4,700,000
Isle of France, *viâ* Flanders ..		148,000
Surat, *viâ* Flanders and Denmark		2,000,000
		32,576,000
	Exported	297,000

Cotton, the produce of the United States, was then beginning to be imported into Great Britain.

In consequence of representations from the British manufacturers, the Court of Directors in the year 1788 sent orders to India for the exportation to London of 500,000 pounds of the best Broach and Surat cotton, or cotton the produce of Bengal of a similar quality. This moderate supply, however, could not be obtained. A small consignment only of very indifferent quality was received from Bombay; and it was not until after the year 1798, that importation took place to any great extent.*

In transmitting the order of 1788 for a supply of cotton, the Court of Directors called upon the Indian Authorities to collect, and send over, full information

* See statement of the general importation of cotton into England, annexed, page xiv.

information respecting the cultivation of that article and the state of the trade in it. This was diligently performed, and a copious selection from the reports received by the Court in 1790, in compliance with these orders, is annexed. These papers shew the principal districts of several provinces in which the cultivation of cotton was then carried on, and record facts and observations which perhaps may be useful to succeeding cultivators.

From this period great attention was bestowed, with a view to the production of a larger and better supply of cotton in the provinces under the Company's government, as well for the advantage of the native cultivators and manufacturers, as for the benefit of Great Britain. Endeavours were made to prevent adulterations in the cotton purchased from the native merchants; and in order to reduce the expense of freight, screws for compression were brought into successful use, and subsequently carried to great perfection.

The importation of the years 1800 to 1809 was on an average 12,700 bales per annum; and this trade being influenced by the effects of the American embargo in 1808, the quantity brought over in 1810 amounted to 79,000 bales.

In the import of every year there was generally among the consignments some good clean cotton; but the greater proportion was not suitable for spinning in this country, and was therefore re-exported to the Continent. The following papers will be found to contain details of the various measures which were pursued for the improvement of Indian cotton, down to the year 1827, but unfortunately without the desired success; and also of the renewed efforts which have been made since that period.

In July 1828, the Committee of Privy Council for Trade directed the attention of the Commissioners for the Affairs of India, in conjunction with the Court of Directors, to the possibility of improving the cultivation of cotton and tobacco in the East-Indies, and requested to be furnished with the fullest information, as to the state both of the culture of those articles and of the trade in them.

The Court of Directors accordingly presented a summary report of the endeavours which for thirty years past had been unsuccessfully directed to these important objects.* This led to a re-

commendation

* See Appendix to Report of the Select Committee of the House of Lords, 1830, page 113 of Collection.

commendation from the President of the Board, that further experiments in cultivation should be instituted in different and distant parts of India, under various circumstances of soil and climate, and also in the modes of cleaning the cotton so produced.

Instructions were consequently sent to the Governments in India, directing their efforts to be renewed, in the first instance, with the seeds of the best of the indigenous plants of India, which would occupy one season; after which they were to be supplied with foreign seeds, as well as with the most approved machines for cleaning cotton used in North America.

Orders were likewise sent to Bombay, to obtain, with as much despatch as possible, a supply of Indian cotton fit for the general purposes of the British manufacturer.* It was to be gathered and prepared with the greatest attention; and in order to astertain whether the article suffered deterioration from pressure by iron screws, a portion of the cotton was desired to be packed, experimentally, in bales of the usual size, but to the density of about 900 lbs. per ton of fifty feet; so that, instead of compressing 363 lbs. into each bale, it might contain about 249 lbs. only.

The Court subsequently obtained from the United States several consignments of the seeds of the best kinds of cotton cultivated there, and six of the machines for cleaning cotton, known as "Whitney's Saw-gin," with the latest improvements.* These served as models for twelve gins, which were carefully made in London, and for twelve sets of the iron-work only, intended to be mounted in India.

The seeds, machines, and iron-work, were forwarded to the three Presidencies in the following manner.

* Extract Papers relative to American tariff, laid before Parliament in 1828.—"Whitney's cotton-gin has hardly been of less importance, generally, than Arkwright's machinery. Without the first, or something like it, the present supply of cotton could hardly have been obtained."

Seeds of Cotton.

	Shipped for		
	Bombay. lb.	Bengal. lb.	Madras. lb.
Sea Island Georgia.			
In October 1829	437	—	—
December „	—	242	—
February 1831	520	487	413
lbs.	957	729	413
New Orleans.			
October 1829	3540	—	—
December „	—	2,434	—
September 1830	—	—	1,737
January 1831	2,486	2,078	—
lbs.	6,026	4,512	1,737
Upland Georgia.			
October 1829	5,948	—	—
December „	—	2,330	—
February 1831	5,265	3,278	—
April „	—	—	1,876 *
lbs.	11,213	5,608	1,876
Demerara. *			
October 1829	139	—	—
December „	—	14	—
Pernambuco. *			
February 1831	20	—	—
September „	83	—	—
	103	—	—

* The seeds obtained from Demerara and Pernambuco were presented to the Court.

SAW-GINS.

	Shipped for Bombay. Gins.	Shipped for Bengal. Gins.	Shipped for Madras. Gins.
American.			
In October 1829	2	—	—
December ,, ...	—	2	—
January 1831	—	1	—
Made in London (to American pattern).			
September 1830	—	—	2
January 1831	8	2	—
	10	5	2
METALLIC-WORK.			
For Gins, made in London.	Sets.	Sets.	
January 1831	9	3	

The accompanying papers shew the results of the instructions of 1829-30, and the effects produced by the consignments of foreign machines and seeds, so far as they have come to the knowledge of the Court: descriptions of the quality of the experimental cotton which has been sent home are also given. It will be seen that most of the specimens which were the produce of indigenous seed, and had been carefully cleaned in the native manner, proved of qualities which are desirable for

for manufacture in this country. Some fine samples raised from the foreign seeds have also been received.

The desired success had not attended the introduction of the American Saw-gin; but as the cotton of India adheres to its seed in a manner similar to that of North America (Upland Georgia), and although the latter certainly sustains *some* injury by the process of ginning, it is found on the whole beneficial to have recourse to it, there seems encouragement to persevere in endeavours to adapt this economical and expeditious mode of cleaning to the growth of India.

In March 1835, the Court of Directors advised their Government of Bombay, that measures had been taken for transmitting, by the shortest route, a renewed supply of the seeds of the best kinds of cotton cultivated in South America and in Egypt, and that it was intended to procure specimens of the machines used for cleaning cotton in those countries, which would be also forwarded. The Court, at the same time, desired an Indian *churka* and a foot-roller to be sent home, accompanied with explanatory remarks, as some improvements on these machines might perhaps be suggested in England.

The

The Company's Agent at Rio-de-Janeiro has stated, that the machines used at Maranham are the "Indian Roller" and the "North American Saw-gin."* He had not then ascertained the practice at Bahia and Pernambuco. From Egypt the Court have imported a machine of very rough and simple construction, which is on the roller principle. The Indian *churka* and foot-roller have recently been received from Bombay.

One of the Whitney's Saw-gins imported from North America in 1829 has been retained at home as a model. Plates of this machine, of the Indian *churka*, Indian foot-roller, and of the Egyptian machine, will be found in this volume.

* The saw-gin which is used for the greater part of the North American cotton, appears to be disadvantageous to the long stapled cotton of Maranham. The value of the cotton of that Province is quoted in the English market thus:

	d.		*d.*	
Maranham . .	12	to	13½	per lb.
Ditto saw-ginned	10⅞	to	11½	do. (October 1836.)

There is generally the like difference in value.

STATEMENT *of the aggregate Quantity of Cotton-wool Imported from every source into Great Britain in the following years, distinguishing that which was supplied by the East-Indies, also the Quantities Exported in each year from* 1781 *to* 1833, *and those Entered for Home Consumption from* 1820.

Years.	Aggregate Importation.	Whereof was Imported from the East-Indies.		Exported of all Growths.	Entered for Home Consumption of all Growths.
	lbs.	Bales.	lbs.	lbs.	lbs.
1781	5,198,778	—	—	96,788	Not distinguished in the public accounts until 1820.
1782	11,828,039	—	—	421,229	
1783	9,735,663	478	114,133	177,626	
1784	11,482,083	52	11,440	201,845	—
1785	18,400,384	240	99,455	407,496	—
1786	19,475,020	—	—	323,153	—

1787	23,250,268	—	—	1,073,381	—
1788	20,467,436	—	—	853,146	—
1789	32,576,023	14	4,973	297,837	—
1790	31,447,605	1,068	422,207	844,154	—
1791	28,706,675	11	3,351	363,442	—
1792	34,907,497	—	—	1,485,465	—
1793	19,040,929	2,432	729,634	1,171,566	—
1794	24,358,567	797	239,245	1,349,950	—
1795	26,401,340	658	197,412	1,193,737	—
1796	32,126,357	2,033	609,850	694,962	—
1797	23,354,371	3,042	912,844	609,058	—
1798	31,880,641	5,842	1,752,784	601,139	—
1799	43,379,278	22,375	6,712,622	844,671	—

(continued).

STATEMENT *of the Aggregate Quantity of Cotton-wool, &c.—continued.*

Years.	Aggregate Importation.	Whereof was Imported from the East-Indies.		Exported of all Growths.	Entered for Home Consumption of all Growths.
	lbs.	Bales.	lbs.	lbs.	lbs.
1800	56,010,732	22,099	6,629,822	4,416,610	—
1801	56,004,305	13,661	4,098,256	1,860,872	—
1802	60,345,600	8,535	2,679,483	3,730,480	—
1803	53,812,284	10,296	3,182,960	1,561,053	—
1804	61,867,329	2,661	1,166,355	503,171	—
1805	59,682,406	1,983	694,050	804,243	—
1806	58,176,283	7,787	2,725,450	651,867	—
1807	74,925,306	11,409	3,993,150	2,176,943	—

1808	43,605,982	13,512	4,729,200	1,644,867	—
1809	92,812,282	35,764	12,517,400	4,351,105	—
1810	132,488,935	79,382	27,783,700	8,787,109	—
1811	91,576,535	14,646	5,126,100	1,266,867	—
1812	63,025,936	2,617	915,950	1,740,912	—
1813	50,966,000	1,421	497,350	No official record.	—
1814	60,060,239	13,500	4,725,000	6,282,437	—
1815	99,306,343	24,300	8,505,000	6,780,392	—
1816	93,920,055	31,000	10,850,000	7,105,034	—
1817	124,912,968	117,955	40,294,250	8,155,442	—
1818	177,282,158	247,300	86,555,000	15,159,453	—
1819	149,739,820	178,300	62,405,000	16,622,969	—
1820	151,672,655	57,984	20,294,400	6,024,038	152,829,633

(*continued.*)

STATEMENT *of the Aggregate Quantity of Cotton-wool, &c.—continued.*

Years.	Aggregate Importation.	Whereof was Imported from the East-Indies.		Exported of all Growths.	Entered for Home Consumption of all Growths.
	lbs.	Bales.	lbs.	lbs.	lbs.
1821	132,536,620	30,360	10,626,000	14,589,497	137,401,549
1822	142,837,628	19,263	6,742,050	18,269,776	143,428,127
1823	191,402,503	38,535	13,487,250	9,318,402	186,311,070
1824	149,380,122	50,846	17,796,100	13,299,505	141,038,743
1825	228,005,291	60,502	21,175,700	18,004,953	202,546,869
1826	177,607,401	64,698	22,644,300	24,474,920	162,889,012
1827	272,448,909	73,549	25,742,150	18,134,170	249,804,396
1828	227,760,642	84,772	29,670,200	17,396,776	208,987,744

1829	222,767,411	80,422	28,147,700	30,289,115	204,097,037
1830	263,961,452	35,212	12,324,200	8,534,976	269,616,640
1831	288,674,853	76,654	26,828,900	22,308,555	273,249,653
1832	286,832,525	109,285	38,249,750	18,027,940	259,412,463
1833	303,656,837	94,683	33,139,050	17,363,882	293,682,976

LIST OF PAPERS

IN THE

COLLECTION.

No.		Page
1.	Letter from the Court of Directors to the Governor-general in Council of Bengal, 20th August 1788 ..	3
2.	Letter from the Court of Directors to the Governor in Council of Bombay, 1st January 1789	4
3.	Letter from the Governor in Council of Bombay to the Governor-general in Council of Bengal, 27th January 1790	6
4.	Letter from the Court of Directors to the Governor in Council of Bombay, 15th December 1790	13
5.	Letter from the Court of Directors to the Governor-general in Council of Bengal, 28th April 1790 ..	14
6.	Ditto ditto 30th May 1792	14
7.	Letter from the Court of Directors to the Governor in Council of Bombay, 21st May 1794	15
8.	Extract Report of the Import and Export Trade of Calcutta by sea, for 1796-7	16
9.	Ditto ditto 1799-1800	17
10.	Extract Proceedings of the Fort St. George Committee of Reform, 1799	18
11.	Letter from the Court of Directors to the Governor in Council of Bombay, 7th May 1800	19
12.	Extract Report on the Private Trade between Europe, America, and Bengal, from 1796 to 1802	20

No.		Page
13.	Letter from the Court of Directors to the Governor in Council of Bombay, 18th March 1801	20
14	Extract Report of the Lieutenant-governor of the Ceded Provinces, 16th January 1802	21
15.	Extract Summary Report on the Cotton Trade of India, Fort William, 30th April 1802	21
16.	Extract Observations of the Reporter-general of External Commerce, Fort William, 1802	25
17.	Letter from the Court of Directors to the Governor in Council of Bombay, 1st June 1803	28
18.	Ditto ditto 3d February 1809	29
19.	Ditto ditto 11th April 1810	30
20.	Ditto ditto 6th June 1810	32
21.	Ditto ditto 29th August 1810	33
22.	Letter from the Governor in Council of Bombay to the Court of Directors, 4th April 1811	37
23.	Letter from the Court of Directors to the Governor in Council of Bombay, 1st November 1811	38
24.	Ditto ditto 27th November 1811	40
25.	Letter from the Governor in Council of Bombay to the Court of Directors, 30th May 1812	41
26.	Letter from the Court of Directors to the Governor in Council of Madras, 7th May 1813	50
27.	Letter from the Governor in Council of Bombay to the Court of Directors, 15th October 1813 ..	52
28.	Letter from the Court of Directors to the Governor in Council of Bombay, 3d June 1814	53
29.	Ditto ditto 22d December 1815	53
30.	Letter from the Governor in Council of Bombay to the Court of Directors, 24th February 1816	54
31.	Ditto ditto 17th April 1816	55
32.	Letter from the Court of Directors to the Governor in Council of Bombay, 12th June 1816	58
33.	Ditto ditto 4th December 1816	59

No.		Page
34.	Letter from the Governor in Council of Bombay to the Court of Directors, 1[illegible]th December 1816 ..	60
35.	Letter from the Court of Directors to the Governor in Council of Bombay, 3d January 1817	62
36.	Ditto ditto 9th April 1817	63
37.	Letter from the Governor in Council of Bombay to the Court of Directors, 20th December 1817	64
38.	Ditto ditto 11th April 1818	66
39.	Letter from the Secretary to Government of Bombay to Collector of Kaira	70
40.	Letter from the Resident at Malwar	76
41.	Extract Bombay Consultations, 26th March 1818 ..	77
42.	Letter from the Court of Directors to the Governor in Council of Bombay, 27th November 1818	80
43.	Letter from Secretary to Board of Trade to the Secretary to Government of Madras, 17th May 1819 ..	83
44.	With Letter from the Commercial Resident in the Ceded Districts to the Board of Trade at Madras, and Mr. Randall's Memoir	87
45.	Letter from the Secretary to Government of Madras to the President and Members of the Board of Trade and Revenue, 8th June 1819	96
46.	Extract Madras Board of Trade General Report, 30th September 1819	98
47.	Letter from the Court of Directors to the Governor in Council of Bombay, 22d December 1819	100
48.	Letter from the Court of Directors to the Governor in Council of Madras, 25th January 1820	101
49.	Letter from the Court of Directors to the Governor in Council of Bombay, 13th February 1822	103
50.	Letter from the Court of Directors to the Governor-general in Council of Bengal, 8th October 1823 ..	105
51.	Letter from the Court of Directors to the Governor in Council of Bombay, 7th January 1824	107

No. Page

52. Letter from the Governor-general in Council of Bengal to the Court of Directors, 31st March 1824 .. 108
53. Ditto ditto 3d August 1826 .. 109
54. Letter from Secretary to Committee of Privy Council for Trade to the Secretary to the Commissioners for the Affairs of India, 26th July 1828 113
55. Letter from the Secretary to the India Board to the Court of Directors, 2d August 1828 .. . 115
56. Letter from the Secretary to the India Board to the Secretary to the Board of Trade, 22d September 1828 116
57. Letter from the Secretary to the Court of Directors to the Secretary to the India Board, 5th September 1828 117
Memorandum on State of Culture and Trade of Cotton in India 118
58. Letter from Secretary to the India Board to the Secretary to the Board of Trade, 16th October 1828 .. 133
59. Letter from the President of the India Board to the Chairman and Deputy Chairman of the East-India Company, 7th October 1828 133
60. Letter from the Court of Directors to the Governor in Council of Bombay, 18th February 1829 136
61. Letter from the Court of Directors to the Governor-general in Council of Bengal, 8th July 1829 .. 145
62. Letter from the Court of Directors to the Governor in Council of Bombay, 4th November 1829 148
63. On the Supply of Cotton from British India (Henry St. George Tucker, Esq.), 1828 152
64. Letter from the Court of Directors to the Governor in Council of Bombay, 3d June 1829 171
65. Letter from Mr. Farish to the Secretary to Government, Bombay, 1st December 1829 176
66. Letter from the Governor in Council of Bombay to the Court of Directors, 31st December 1829 176
68. Letter from the Court of Directors to the Governor in Council of Madras, 18th August 1830 178

No. Page

69. Letter from the Governor-general in Council of Bengal to the Court of Directors, 22d September 1830 .. 183
70. Letter from the Governor in Council of Bombay to the Court of Directors, 17th November 1830 184
71. Ditto ditto, 21st December 1830 186
72. Letter from Assistant Secretary to the India Board to the Secretary to the Court of Directors, 30th December 1830 189
73. Letter from Mr. Cobet of the Hague to the India Board, 21st September 1830 190
74. Report by Company's Warehouse-keeper on Samples sent with Mr. Cobet's Letter 191
75. Letter from the Resident at Etawah and Calpee to the Board of Trade, Bengal, 11th June 1831 194
76. Letter from the Governor in Council of Bombay to the Court of Directors, 30th June 1831 195
77. Letter from Mr. J. H. Pelly, Acting Commercial Resident at Broach, to the Secretary to Government, Bombay, 7th April 1831 195
78. Letter from the Secretary to the Agricultural and Horticultural Society of India to the Secretary to Board of Trade, Bengal, 19th July 1831 197
79. Letter from the Board of Trade at Calcutta to the Bengal Government, 25th October 1831 198
80. Letter from Governor-general in Council of Bengal to the Court of Directors, 25th October 1831 200
81. Letter from the Secretary to the Bengal Government to the Board of Trade, 8th November 1831 201
82. Letter from Dr. Lush, Superintendent of Botanical Garden, Bombay, 11th January 1832 203
83. Letter from the Court of Directors to the Governor in Council of Bombay, 6th March 1832 205
84. Minute by the Governor of Bombay 11th May 1832, 222
85. Letter from the Governor in Council of Madras to the Court of Directors, 15th May 1832 224

No. Page

86. Letter from the Governor in Council of Bombay to the Court of Directors, 19th June 1832 226
87. Letter from Mr. Truscott, Acting Resident at Etawah and Calpee, to the Board of Trade, Bengal, 20th June 1832 227
88. Letter from the Governor-general in Council of Bengal to the Court of Directors, 24th July 1832 235
89. Letter from Chief Secretary to the Madras Government to the President and Members of the Board of Revenue, 17th May 1833 237
90. Letter from Mr. Lacon, Collector of Cuddapah, to the Board of Revenue, 30th March 1833 238
91. Letter from Mr. Blackburne, Collector of Guntoor, to the Board of Revenue, 16th April 1833 240
92. Letter from Mr. Lacon, Collector of Cuddapah, to the Board of Revenue, 16th April 1833 243
93. Letter from Mr. Dent, Collector of Arcot, to the Board of Revenue, 7th May 1833 244
94. Letter from Mr. Orr, Collector at Salem, to the Board of Revenue, 8th May 1833 245
95. Letter from Mr. Thomas, Collector at Coimbatore, to the Board of Revenue, 4th August 1832 247
96. Letter from Mr. Mason, Collector at Guntoor, to the Board of Revenue, 11th August 1832 248
97. Letter from the Governor in Council of Bombay to the Court of Directors, 5th October 1833 .. 252
98. Ditto ditto 15th February 1834 .. 269
99. Report on Samples of Cotton from Madras, May 1834 271
100. Ditto on eighteen bales of Cotton from Experimental Farm in Guzerat, 1833 272
101. Ditto on sixty-two bales of Cotton from ditto, 1834 274
102. Ditto on two small bales of Cotton of Experimental Growth, 1834 276
103. Ditto on a box of Specimens of Cotton, 1834 .. 277

No. Page

104. Report on seven small bales of Cotton, forwarded to the Court of Directors by the Agricultural and Horticultural Society of India, 19th October 1835 281

105. Letter from the President of the India Board to the Court of Directors, 27th February 1835 282

106. Letter from the Court of Directors to Governor in Council of Bombay, 20th March 1835 284

107. Letter from the Secretary to the Court of Directors to the Company's Agent at Cairo, 19th March 1835 285

108. Letter to the Company's Agent at Rio de Janeiro, 19th March 1835 287

109. Letter from the Company's Agent in Egypt to the Court of Directors, 23d October 1835 289

110. Letter from the Governor in Council of Bombay to the Court of Directors, 2d March 1836 292

111. Letter from Mr. Secretary Reid to Dr. Lush, Superintendent of the Botanical Garden, Bombay, 22d August 1835 293

112. Letter from Dr. Lush to Mr. Townsend, Acting Secretary to Government of Bombay, 4th December 1835 294

Extract from the Reports of the Collectors and Commercial Agents made to the Bengal Board of Trade, 1789-90 299

Observations upon Brazil Cotton-wool (Mr. Hunt) 1808 372

Directions for the Culture of Cotton in Africa, printed by the African Society, 1808 379

Remarks on the Culture of Cotton at the Island of Bourbon, extracted from Bombay Consultations, 15th October 1811 385

	Page
Questions referred to Commercial Residents and Collectors of Revenue by the Madras Board of Trade, with their Answers, 23d July 1812	398
Extract Bengal Consultations, 18th September 1812	416
Observations on the Cottons of India (Mr. Bernard Metcalfe), 1815	417
Further Observations on East-India Cotton (Mr. Hunt), 1828	422
Remarks on the Culture of Cotton in the United States of America, 1829	424
Statement of the best Method of cultivating New Orleans Cotton	426
Questions put to the Maker of Whitney's Saw-gins, with his Answers thereto	429
Description of Whitney's Saw-gin	430

COTTON-WOOL

(FIRST SERIES.)

PAPERS

RELATING TO

THE PRODUCTION

OF

COTTON-WOOL.

No. 1.

EXTRACT LETTER *from the Court of Directors to the Governor-general in Council, Bengal, dated the 20th August* 1788.

Par. 2. We earnestly call your attention to the article of cotton, with a view to affording every encouragement to its growth and improvement in general, but particularly to the species manufactured into the finer sort of thread in use for the superior goods of the Dacca fabric, as we learn that many of our orders for those assortments have not been able to be executed for want of such fine thread.

3. We have, in compliance with the wishes of the manufacturers, come to a resolution of importing 500,000 pounds weight of Broach and

 Surat

Letter to Bengal, 20 Aug. 1788.

Surat cotton, or cotton of the produce of Bengal of a similar quality, you will, therefore, concert with our servants at Bombay the means of carrying this resolution into effect, and furnish us with every needful information respecting the article, as to its growth, quality, cost, the quantity which is capable of being procured for exportation, the political and commercial effects that would arise from such exportation, and any other particulars you may deem it necessary we should be informed of.

No. 2.

EXTRACT LETTER *from the Court of Directors to the Governor in Council at Bombay, dated the 1st January* 1789.

Letter to Bombay, 1 Jan. 1789

Par. 4. The attention your Accountant, Mr. Dobinson, manifested to his duty in bringing before you the mode of calculating the tonnage of cotton, merits our approbation. In our letter of the 22d April last, we treated on this subject pretty much at large, and not being then in possession of the extent of the reduction you represented you had been enabled to effect, we communicated some particulars that had come within our knowledge on that subject. As the standard you mention to have adopted very considerably exceeds the measurement stated in our former letter, which we have reason to think is tolerably accurate, we must desire

desire that this subject may be again taken under consideration, and that you ascertain with the utmost degree of care and attention the smallest possible dimensions to which a bale of cotton is capable of being compressed by the Company's screws; and if, after so doing, it shall appear that the new standard dimensions are not capable of being diminished, you must endeavour to ascertain whether the cause is to be attributed to any defect in the principle on which the Company's screws are constructed, or whether they require the aid of any mechanical improvements, to give them powers which they are not at present possessed of.

Letter to Bombay, 1 Jan. 1789.

5. If individuals, either by superior industry, or the application of powers better adapted to the end proposed, have been enabled to accomplish so material an advantage as the difference thus gained in point of tonnage, provided there were no other objections to the measure, this alone would be sufficient to prevent our complying with the request contained in your public letter, for the suppressing of private screws, and confining the merchants to the use of the Company's screws only.

No. 3.

EXTRACT LETTER *from the Governor in Council at Bombay, to the Governor-general in Council, Bengal, dated the 27th January* 1790.

ACCOUNT of the Cotton used in the Cloth Manufactures at Surat, including an Estimate of the Quantity produced in the adjacent Countries, that reserved for Home Consumption, and what Exported, &c.

Letter from Bombay to Governor-gen., 27 Jan. 1790.

Cotton is produced from seed, and throughout this country the seed is nearly the same in quality. Only one kind of cotton is used in the cloth manufactures, but this varies considerably in value according to the part it comes from, the difference arising in a great measure from the soil, and also, in some degree, from the manner in which the cotton is extracted from the pod. This last reason particularly affects and lessens the value of the Bownaghur cotton, it being always more full of dirt and leaf than that of any other part, and the soil being poorer the becas grow much smaller.

The seed, which is usually put into the ground as soon after the first fall of rain as the earth is sufficiently softened to be easily cultivated, is sown in straight lines and as regular as possible, so that the shrubs may shoot up single and about a foot asunder. The ground is kept well weeded, and (except a sufficient moisture to soften it, so that

that the young roots may easily strike downwards) free from the water, carefully allowing none to lodge on the surface, it being pernicious both to the seed and shrubs. Cotton is seldom sown after the end of August in and about the Guzerat, from the great uncertainty of having sufficient rain at the time when the shrub most requires it. When the shrub is well advanced and strong, it requires no other moisture than the dews, which fall very heavy in this part of the country as soon as the cold season sets in, which is about the beginning of November. In three or four days after the seed is sown the shrub makes its appearance, and in five or six bears two leaves.

Letter from Bombay to Governor-gen., 27 Jan. 1790.

In November and December the bud appears, which flowers in four or five days. The flower after continuing about the same time falls, and the pod appears, which ripens in about twenty-five or thirty days, but requires both sun and heavy dews to bring it to perfection. When ripe it bursts open on three sides and discovers the cotton. Five or six days after the pod is open the cotton is ready to gather, but may remain upon the shrub for ten days without injury.

It is customary here to gather the cotton ten days after the pod opens, and then allow ten days more for other pods to ripen, and so continue gathering as they come forward till the month of April, by the end of which the cotton is all off the ground. The cotton that is taken from the shrub

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shrub the first and second time of gathering is the finest, and it afterwards gradually diminishes in quantity, as the vigour of the shrub becomes more and more exhausted; the difference of which between the first and last crop is estimated at about five rupees in the candy. The produce is generally valued at two third-parts seeds and one third-part cotton, when cleaned at the wheel or cheriah; but if the soil is fine and the season has been favourable, it will produce a few seers more, sometimes yielding even seventeen seers of clean cotton. It is usual to sow four or five seers of seed in one begah of ground, which with a favourable season is expected to yield about twenty-five maunds including the seed. At the season for flowering and budding, sun and dews are much required, cloudy and rainy weather destroying the crop.

Cotton ought not to be sown two succeeding seasons in the same ground, though it does not injure the ground to sow grain of different kinds, such as do not, like rice, require much water in it; yet, letting the earth be fallow one season, *having it well cleared of weeds* and roots, and thoroughly opened so as to imbibe the rains, much improves it, and makes it yield a good crop of the finest cotton the next year, provided the season is not unfavourable. Among the poorer planters it is customary to sow cotton every year in the same land, but it generally lessens the crop considerably, both in quality and quantity.

The

The seed for planting must be thoroughly cleaned of the cotton, which is generally done in this country by rubbing it over a cott, close and well strung with coir, the cotton and bad seed remaining on the cott and the good seed falling through.

Letter from Bombay to Governor-gen., 27 Jan. 1790.

Seed for transportation to other countries, should not be separated from the cotton but covered with it, be put into dry sweet casks, and placed in a dry part of the ship or vessel conveying it, not in the hold, as the heat will be too great and the air foul, nor exposed to wet or damp air, but in an open, airy, thorough dry situation, and it will in that state preserve for two or three years. If separated from the cotton it decays in a short time; and moisture, of course, occasions a premature vegetation.

The cotton is cleaned of seed by small wheels, and the expense of this process comes to about a rupee for five or six maunds. The seed, when extracted, is used for sowing and feeding the cattle, and sells for two or three maunds per rupee. The best cotton is produced in the districts of Jamboo-seer and Ahmood, and throughout the pergunnah of Broach. Good is also grown in the country near to Surat, but inferior to Broach or Ahmood; and the Bownaghur cotton is the worst of all, being estimated near seven per cent. inferior to the Ahmood, owing in a great measure to the soil, and

Letter from Bombay to Governor-gen., 27 Jan. 1790.

and also to the bad method of extracting it from the pod.

ESTIMATE.

Countries.	Produce.	Home Consumption.	For Exportation.
	Candies.	Candies.	Candies.
Surat pergunnah	5,000	2,000	3,000
Broach do.	12,000	3,000	9,000
Jambooseeer and Ahmood do.	12,000	2,500	9,500
Bownaghur.	14,000	1,500	12,500
	43,000 or 86,000 Bales.	9,000 or 18,000 Bales.	34,000 or 68,000 Bales.

The quantity exported may be estimated at between 50,000 and 60,000 bales.

Ahmood and Broach cotton (though most of the cotton from Guzerat passes by the name of Ahmood) bore price this last season (1789), in March Rs. 95 per candy, and in April Rs. 98, and fell before the season closed in May, to Rs. 88 or Rs. 90; but the price must always depend upon the place where it is to be delivered. The above price was at Surat, which, including the following charges, raises the price from the original cost, for example, at Broach.

Charges

Charges on a candy of Cotton bought at Broach and sent to Surat, either by Sea or Land, at the beginning of the Season, viz.

Letter from Bombay to Governor-gen. 27 Jan. 1790.

	By Sea.			By Land.		
Packing and Screws ...... Rupees	1	0	0	1	0	0
Freight	2	0	0		—	
Cart-hire		—		5	0	0
Wrapper or gunny	2	2	0	2	2	0
Customs at Broach	2	2	0	2	2	0
Brokerage	1	2	0	1	2	0
Ropes........................	0	3	0	0	3	0
Insurance	1	2	0	0	3	0
Cooley-hire, Twine, &c.........	1	0	0	1	0	0
Rupees....	12	3	0	15	0	0

The method adopted in and since 1788 on the Company's account, of receiving the cotton loose and packing it before their own people, is greatly to their advantage, notwithstanding it enhances the price four or five rupees per candy, as it prevents all kinds of fraud, the receipt of seedy or leafy cotton, and secures it against being kept in close package when damp or discoloured, as, also, it insures them full weight. The attention, likewise, to having good and new gunnies and ropes, will

Letter from Bombay to Governor-gen., 27 Jan. 1790.

will tend equally to give their cotton a preference to that of other traders, as it prevents that great accumulated mixture of dust and filth, unavoidable with bad wrappers, and when the bales are screwing, landing, or relanding; a measure looked upon by the country merchants as deviating from their general principle of economy, which leads them frequently to risk their whole property sooner than be at a trifling precautionary expense.

Of late years cotton has not been in great demand in Bengal, consequently, little or none has been carried thither, but it is this season reported te be at twenty and twenty-two rupees per pucca maund; and last year (1788) the best cotton in China, which was the Company's, sold for fourteen tale the pecul. The exportation of about 8,000 or 10,000 bales per annum, either to Europe or Bengal, would probably raise the price of cotton in a trifling degree, but is not supposed likely to affect the manufactures, as it appears by the present season that the cultivation still increases in proportion with the demand for it.

Surat, 31st July 1789.

No.

No. 4.

EXTRACT LETTER *from the Court of Directors to the Governor in Council at Bombay, dated the* 15*th December* 1790.

Par. 7. On the 29th September last we consented that the ships going to Botany Bay this season may proceed to Bombay, and load home with cotton upon private account, under the inspection and directions of the Company's servants at that settlement, provided such cottons are sold at the Company's sale, subject to the usual expenses, the Company's duty only excepted, and provided it be clearly understood that the said ships are not to interfere with any other part of the Company's exclusive commerce. Letter to Bombay, 15 Dec. 1790.

8. And on the 15th October following, upon an application to us for information, whether if the owners of any of the Company's ships, not likely to be taken up during the two ensuing seasons, shall be inclined to make offers to the public for conveying convicts to Botany Bay, and bringing home cottons from Bombay on private account, the Court will in such case object thereto ?—we resolved that this Court have no objection to the ships being employed on the service above-mentioned.

No. 5.

Extract Letter *from the Court of Directors to the Governor-general in Council, Bengal, dated the 28th April* 1790.

Letter to *Bengal*, 28 April 1790. We take this opportunity of recommending to your consideration the propriety of introducing the Ahmood species of cotton into the Bengal district, which, from a similarity of soil and climate, seems best adapted to its growth, as it may in future prove a valuable article of import to China.

No. 6.

Extract Letter *from the Court of Directors to the Governor-general in Council, Bengal, dated the 30th May* 1792.

Letter to Bengal, 30 May 1792. Par. 8. We have perused with much pleasure your several proceedings respecting an investigation into the state of the trade in cotton and thread, and entirely concur in the measures you have judged it right to pursue, with a view to effect an improvement in the culture of the raw material. As the reports of the several Collectors and Commercial Agents, particularly that of Mr. Duncan at Benares, which we cannot but notice as a most masterly performance, are replete with important information on the points to which the object of their inquiry was directed, we shall cause them

them to be carefully preserved among the more valuable and select parts of our commercial records, for the purpose of being consulted whenever occasion requires. Letter to Bengal, 30 May 1792.

9. In respect to the provision of cotton for the English market, as directed by our letter of 20th August 1788, the Government at Bombay, in consequence of the orders you transmitted them for that purpose, have made us a consignment of the Ahmood assortment, which, on being brought to sale, has produced only from $7\frac{7}{8}$*d.* to $10\frac{1}{2}$*d.* per lb.; and we also are given to understand, some illicit consignments to Ostend have not turned to a more productive account. It is evident, therefore, notwithstanding the flattering allurements held out by the British manufacturers, that the article will by no means answer.

No. 7.

EXTRACT LETTER *from the Court of Directors to the Governor in Council at Bombay, dated the* 21*st May* 1794.

We send you a machine that has been invented for facilitating the operation for cleansing cotton from seeds and other foul particles. It was intended to have been sent you in the course of the last season, but some impediments occurred in respect of its being shipped. Letter to Bombay, 21 May 1794.

No.

No. 8.

Extract Report *of the Import and Export Trade of Calcutta, by Sea, for* 1796-7.

Import and Export Trade of Calcutta, 1796-7.

The average cost of cotton cleaned from the seeds at Jolloan, and Calpy, in the Mahratta country, may be estimated at eight sicca rupees per maund of 102 sicca-weight to the seer, which is generally subject to the following charges and profits, *viz*.

1st. Charges of transportation, Vizier's and Company's duties, and profit to the Exporter to Mirzapore.

2d. Profit to the merchant at Mirzapore, including godown-rent, &c.

3d. Charges of transportation, honourable Company's duty at Manjee, and profit to the transporter to Bogwan Gholah, or other adjacent places.

4th. Profit to the merchant at Bogwan Gholah, including godown-rent, &c.

5th. Charges of transportation and profit to the transporter to the place of ultimate sale.

6th. Profit to the purchaser at place of sale, and probably afterwards to the retailer.

If the spinner, therefore, purchases this cotton at the rate of eighteen rupees per maund of eighty sicca-weight to the seer, these different profits, charges, and duties, amount at the sale price to 186 per cent on the cost.

It

It may be inferred from the above and the reports of the different Collectors and Commercial Residents made on this subject by order of the Governor-General in 1789, that the nature of the soil in Bengal, and other incidental circumstances, must be against the cultivation of this kind of cotton within the Company's provinces. Probably the natives, like prudent fathers of families in Europe and America, never think either of making or growing at home, what can be furnished at a smaller expense elsewhere. Import and Export Trade of Calcutta, 1796-7.

No. 9.

EXTRACT REPORT *of the Import and Export Trade of Calcutta by Sea, from* 1*st June* 1799 *to* 31*st May* 1800.

Par. 7. It is not very easy even to imagine to what extent the export trade of this rich and fertile country might be ultimately brought, should the cultivation of cotton for the China trade, the manufactures of Bengal and export trade to Europe, be encouraged in the Behar and Benares districts and the higher parts of Bengal. Import and Export Trade of Calcutta, 1799-1800.

The weavers at present depend upon the up-country cotton imported into Bengal for seven-eighths of the quantity used in their various manufactures.

No.

No. 10.

Extract Proceedings *of the Fort St. George Committee of Reform.*

Fort St. George Committee of Reform.

The Committee remark with concern, that the raw material for the Coast investment is procured in a great measure from *foreign countries*, and they regret the little encouragement that has been given to the growth in the Company's dominions to that species of cotton best adapted to their goods. A failure in the import of cotton by increasing the price of the raw material, affects the weaver more than the dearness of rice (which during the best of times is seldom within his reach), and obliges him to debase the manufacture.

It appears that cotton imported from Sâddah Nagpore is best adapted to the Coast manufacture, but being of a higher price, is mixed by the weavers with cotton the produce of the Circars.

The Commercial Resident should be directed to procure seed of this superior cotton; and if, on a trial of its culture on the Coast, it is not found to degenerate, every possible encouragement to the growth of it should be given. Eighty rupees per candy should be held out as a fixed price for a given number of years; and when the culture of this species of cotton is established, it will be sufficient if the Commercial Residents are always directed to afford a market for it at sixty-four rupees

rupees per candy, which may be considered as a fair average price. Fort St. George Committee of Reform.

During the first three years a bounty should be granted on every candy brought clean and dry to the nearest Commercial Residency.

If on a trial of the seed of that cotton held in greatest estimation, it is found, from circumstances of a local nature, to degenerate, it should then be ascertained what quantity of country cotton is necessary to the manufactures of each district; and if sufficient is not now produced, means, as before stated, should be taken to increase the cultivation.

No. 11.

EXTRACT LETTER *from the Court of Directors to the Governor in Council at Bombay, dated the 7th May* 1800.

In our instructions, 29th May 1799, we informed you that any spare tonnage might be filled with cotton-wool. Since then the prices are much abated: the quantity sold on the 21st April 1800 produced only fifteen-pence per pound. We trust, therefore, to your exertions for procuring tonnage for our returning shipping without the aid of this article; but in the event of your not being able to effect this, we would rather have them filled up with cotton than sent away dead-freighted. Letter to Bombay, 7th May 1800.

No.

No. 12.

EXTRACT REPORT *on the Private-Trade between Europe, America, and Bengal, from 1st June 1796 to 31st May* 1802.

Private-Trade between Europe, America, and Bengal, 1796 to 1802.

Par. 9. The principal increase to London, as before stated, has been in the article of piece-goods. Only a very small proportion of the cotton with which these cloths are manufactured is grown in Bengal, the remainder is imported from the Deccan, from the aumildarry of the rauje of Calpee, or of various other parts of the Mahrattah country.

No. 13.

EXTRACT LETTER *from the Court of Directors to the Governor in Council at Bombay, dated the 18th March* 1801.

Letter to Bombay, 18 March 1801.

Par. 39. After a perusal of the proceedings referred to, relative to the Rhaudaterra plantation under the superintendence of Mr. Brown, we approve of your determination to continue the same upon its present footing. Twelve months from this time will complete the period at which, in Mr. Brown's opinion, the plantation will be in so productive a state, as not only to defray its current charges, but also to produce a profit, by which the sum expended therein will be in a course of gradual reimbursement; we shall then be able to appreciate

appreciate the probable advantages arising from the experiment, the merits of Mr. Brown in its projection and superintendence, and to determine whether the scheme should be prosecuted, either partially, or entirely abandoned. Letter to Bombay, 18 March 1801.

No. 14.

EXTRACT REPORT *of the Lieutenant-Governor of the Ceded Provinces.*

Bareilly, 16th January 1802.

Report on Ceded Provinces, 16 Jan. 1802.

Allahabad was formerly esteemed a considerable mart for the cotton of the Deccan and the countries to the southward of the Jumna; but, from the numerous exactions and oppressions experienced by the merchants, the cotton has for some years past been carried to Mirzapore for sale.

No. 15.

EXTRACT SUMMARY REPORT *on the Cotton Trade of India.*

Fort William, 30th April 1802.

Report on Cotton Trade, 30 April 1802.

The average annual quantity of cotton imported into the Honourable Company's provinces on this side of India, by the Ganges, has been for many years 450,000 maunds of ninety-six pounds.

The

Report on Cotton Trade, 30 April 1802.

The price depends entirely on the relative prices in China, the supposed demand in consequence, and the quantity likely to be produced in Guzerat.

When the price of cotton at Broach and Surat, as before the year 1790, was from Rs. 80 to Rs. 95 per candy, Bengal so far from being able to enter into any kind of competition in regard to the export of cotton, was indebted to Surat for an annual importation from thence for its own manufactures.

The Guzerat cotton imported into Calcutta from Surat, and particularly such parts of it as were the growth of Ahmood and Jambooseer, were certainly very superior in quality to even the Nagpore, or any other species of cotton imported from the foreign countries on this side of India. The price was, of course, proportionably higher.

The quantity of cotton imported into the Honourable Company's provinces on this side of India is stated at 450,000 maunds, of which it may be estimated that 180,000 maunds are the produce of the Deccan or various districts as low as Nagpore, from which place the quality of cotton imported is superior to the produce of any other districts, and 270,000 maunds from the northward, principally from the aumildary of the raja of Calpee.

Of 450,000 maunds of cotton imported into the Honourable Company's provinces, 40,000 maunds are annually required for the manufactures in the zemindary

zemindary of Benares, and the remainder for the manufactures in Bengal, Behar, and Orissa. Report on Cotton Trade, 30 April 1802.

If the quantity of cotton imported does not exceed 450,000 maunds, the price will be so high as not to admit of an export from Bengal by sea of any considerable quantity; but the reverse is the case when the import is 600,000, as will be seen by the exports of the present season.

The average annual cost to the Mirzapore merchants, of cotton, at Jallore, has been somewhat less than nine rupees per maund of ninety-six pounds. Any attempt to ascertain the price which the cultivator received from the original purchaser, or of the profit attendant on rearing cotton in preference to any other article, would be so vague and indefinite, as to be unworthy observation. The leading fact is, that the cultivator did not receive more for his cotton than nine rupees per maund.

So long as the Honourable Company's subjects in the zemindary of Benares, Behar, Bengal, and Orissa, were obliged to rely for their manufactures on the cotton the produce of foreign countries, it was of little consequence from whence this importation took place.

By the late cession of territory from his Highness the Nawaub Vizier, the Honourable Company are come into possession of the three districts of Currah, Carah, and Etawah.

These three districts have always produced a considerable quantity of cotton, particularly the latter

Report on Cotton Trade, 30 April 1802.

latter in the vicinity of Miserepoor. The export, of late, has not, however, been great, because nearly the whole of the raw material has been worked up by the weavers on the spot in the manufacture of piece-goods; for it is to be observed, that every foreign ship importing bullion into Calcutta, brings this bullion principally for the purpose of exchanging it for the piece-goods manufactured in the territories lately acquired by his Excellency the most noble the Governor-general in Council. It is not easy to ascertain the quantity of cotton hitherto produced in the territories lately ceded to the Honourable Company; but as private merchants, under the former Government, did actually induce the inhabitants to cultivate above 200,000 begahs of land therein with the indigo plant, certainly the Honourable Company's Commercial Resident, assisted by the fostering hand of his Excellency the Lieutenant Governor, could persuade them to bring a similar, or even an additional quantity of land into cultivation with the cotton-plant.

The estimated produce of a begah of land (one-third of an acre) is from two to three maunds. Kopans or cotton with the seed, generally producing from fifty to seventy-five pounds of clear cotton, 250,000 to 300,000 begahs of land may, therefore, be requisite to produce 200,000 maunds of clean cotton.

By encouragement to the inhabitants of the late ceded

ceded provinces in the growth of cotton, the population will increase by emigrations from other parts, many tracts of land now lying fallow will be brought into cultivation, and the Honourable Company's land revenue will be thereby proportionably increased. Report on Cotton Trade, 30 April 1802.

No. 16.

EXTRACT OBSERVATIONS *of the Reporter-general of External Commerce*, 1802.

Trade of the Doab.

Pa. 32. The staple commodity of the countries to the westward is cotton, and as on the due supply of this article the most valuable manufacture of the Lower Provinces must in a great measure depend, it becomes an object of importance to ascertain the mode in which the supply can be most regularly obtained, and at the cheapest rate. Report on External Commerce, 1802.

33. To accomplish this desirable object, no better mode can possibly be desired than is pointed out in the 40th, 41st, and 42d paragraphs of the Report of the Honourable the Lieutenant Governor.

34. Should it be deemed expedient for Government to be at the expense of clearing the Jumna of the numerous rocks which now intercept the navigation of that river, and subsequently to grant a guard of sepoys at fixed periods to accompany

Report on External Commerce, 1802.

pany the boats of merchants to Allahabad, an additional duty for this purpose will be paid by the traders of every description with the greatest willingness.

35. But until a sufficient quantity of cotton is raised in the Doab and Rohilcund for the manufactures of Benares, Behar, and Bengal, it probably may not be advisable to raise the valuation of the cotton beyond the established rate of six rupees per maund, Cawnpore weight, although the measure would certainly be attended with the full increase of revenue of two lacs of rupees per annum, as stated in the 44th paragraph of the Report of the Honourable the Lieutenant Governor.

36. Should it be deemed expedient for Government to become purchasers of cotton, either for investment to Europe or China, to supply their factories in the Lower Provinces, or for other purposes, the encouragement given to the ryots by a speedy and certain sale, would much tend to increase the cultivation in the upper parts of the Doab, which are peculiarly adapted to the produce of it.

37. The price of cotton at Cherowlez, on the banks of the Jumna, in the beginning of March last, was 8 rupees 8 annas per maund of 102 sicca-weight to the seer (the Calcutta weight is 82 rupees 10 annas). Towards the end of that month it rose to 11 rupees, in consequence of the increased

increased demand for piece-goods to be provided in the Doab, when the account of the preliminaries of peace were received by the merchants in the Upper Provinces; but whether these prices were for cotton the growth of the Doab or of the Mahratta country, cannot be ascertained. Report on External Commerce, 1802.

40. The importance of obtaining an investment of cotton for the China market in the Ceded Provinces on better terms than is now paid by the Honourable Company either at Bombay or Surat, supersedes every other mercantile consideration.

41. It may be advisable that the attention of the Commercial Resident in the Doab should be solely directed to the two articles of cotton and saltpetre.

42. In respect to cotton:—

1st. By a guarantee of a certain price and occasional advances to the cultivators (if requisite), to whatever extent the Honourable the Lieutenant Governor may deem advisable.

2d. By occasional purchases from the Mahratta or other merchants when the price does not exceed nine rupees per maund, agreeably to the resources of Government and the orders in consequence which would be given by the Honourable the Lieutenant Governor.

3d. By encouragement to the native merchants to store their cotton at such particular gunges as the Honourable the Lieutenant Governor may deem best adapted for this purpose.

No.

No. 17.

EXTRACT LETTER *from the Court of Directors to the Governor in Council at Bombay, dated the 1st June* 1803.

Letter to Bombay, 1 June 1803.

Par. 9. The six bales of cotton, the produce of Rhaudaterra plantation, were of very excellent quality, and we indulge the hope that its cultivation will reimburse with profit the expenses of forming the Rhaudaterra plantation. The Bourbon sort sold for 2*s.* 2*d.* and the native at 15⅞*d.* per pound; but we have reason to believe that, even in the present very depressed state of the cotton market, if there had been a quantity sufficient to have excited competition among the dealers, the selling price would have been higher. The native sort was not so much inferior to the other in quality as the difference in price would seem to point out, but was not so well cleared from seeds and extraneous matter. Surat cotton has for several months past been at the low price of 9*d.* to 11*d.* per pound, and we understand that large importations of cotton are expected from the Southern Provinces of North America, the cultivation of indigo having for some time ceased to be profitable there.

10. The sample of Malabar cotton, referred to in your Revenue letter of 22d December 1801, was so small that no manufacturing experiment could

could be made with it. It was of tolerable good quality; but, in the opinion of the principal dealers to whom it was shown, it had undergone some preparation to give it an elastic and clean appearance. Letter to Bombay, 1 June 1803.

No. 18.

EXTRACT LETTER *from the Court of Directors to the Governor in Council at Bombay, dated the* 3*d February* 1809.

Par. 2. Our last letters will have fully apprized you of the urgency of the present demand in England for a large supply of the article of cotton-wool. The measures which have been lately adopted by the Legislature of the United States of America will in their consequences operate to check very severely some of the manufactures of this country, unless a liberal supply of cotton-wool can be procured from other sources than those States; and it is to our territorial possessions in Asia that the hopes of the manufacturing classes are principally directed. It will, no doubt, become a very pleasing duty to our Government to use their utmost efforts that these hopes may not be disappointed. Letter to Bombay, 3 Feb. 1809.

No.

No. 19.

EXTRACT LETTER *from the Court of Directors to the Governor in Council at Bombay, dated the* 11*th April* 1810.

Letter to Bombay, 11 April 1810.

Par. 2. In addition to the particulars of information on the subject of cotton-wool which are communicated in our letter of the 30th ultimo (March), we again call your attention to this subject, with a view to the better selection of the quality of your cotton; and for that purpose we refer you to a box in the packet, in which are contained sundry samples of cotton, and also some copies of a printed paper which was prepared for the instruction of the planters of cotton in Africa, and which, we understand, has been drawn up from accurate practical experience combined with botanical knowledge.

3. The sample No. 1 is your Toomeel cotton imported on the ship Bombay, and which is represented to be of a desirable quality, such as will answer well as a substitute for the bowed upland Georgia cotton. The generality of cotton which you consigned to us by the Bombay was of fair quality, but considerably inferior to the Toomeel.

4. No. 2 is a sample of bowed Georgia cotton. There are other kinds of cotton imported from Georgia, but all of a superior quality. The total importations from that province were :

Letter to Bombay, 11 April 1810

		lbs.
In the year	1804	4,772,699
	1805	6,758,019
	1806	6,809,183
	1807	10,341,278
	1808	3,018,906

and it is to be remarked, that the upland Georgia cotton would be more desirable to the manufacturers of these kingdoms, had it been cleaned by the usual machine instead of the bow, which injures the staple.

5. No. 3 is a sample of privilege cotton received from your presidency by the ship Lord Castlereagh in the present year. This cotton was much better cleaned than any of the Company's; but it appears to have undergone some degree of beating, whereby it is considered to have partaken of the injurious effect of bowing, mentioned in the foregoing paragraph.

6. No. 4 is a sample of cotton-wool the growth of the island of Grenada, and which is considered to be of the standard quality which the principal consumption of the British manufactories constantly requires, as it possesses more substance than the upland or bowed Georgia cotton, and less than the cotton of Demerara, Brazil, Sea Island, Georgia, or Bourbon.

7. It is our intention to procure a quantity of seed of West India and American cotton, part of which

Letter to Bombay, 11 April 1810.

which we shall transmit to you; and it would appear from the first paragraph of the directions for the culture of cotton in Africa, that the description of situation, as to soil and exposure, which are most desired for American cotton, offers itself in superabundance upon our island of Salsette; respecting which we desire to have your particular opinion, with a view to the increase of the cultivation of that island.

No. 20.

EXTRACT LETTER *from the Court of Directors to the Governor in Council at Bombay, dated the 6th June* 1810.

Letter to Bombay, 6 June 1810.

Par. 15. The large quantities of India cotton-wool which have lately been imported into London, have reduced the price here lower than any former example. It would not be practicable, at the present time, to effect the sale of any considerable quantity, but at prices which would be ruinous to the importers, nor is the prospect in future at all encouraging; it therefore becomes necessary to use all proper measures to effectuate our purchases in India at reduced rates of cost. We recommend this subject to your attentive consideration,

No. 21.

EXTRACT LETTER *from the Court of Directors to the Governor in Council at Bombay, dated the 29th August* 1810.

Par. 8. At the commencement of the year 1809, in consideration of the state of public relations with the United States of America, we issued, with the approbation of His Majesty's Ministers, instructions to our servants in India to provide considerable quantities of cotton-wool for immediate transmission to England, and also issued advertisements at the several presidencies, authorising the owners of private ships, which usually carry cotton-wool to China, to bring the same to the port of London, and in consequence thereof very considerable quantities of cotton-wool have been imported from India; but from the renewed intercourse with America, and the coarse nature of Indian cotton, the manufactures of these kingdoms do not now require the same. Letter to Bombay, 29 Aug. 1810

9. About thirty millions of pounds-weight of cotton-wool were sent from India in consequence of our instructions, of which about one million two hundred and fifty thousand pounds have been used by the British manufacturers, and three millions two hundred and fifty thousand pounds have been exported to the continent of Europe, making together somewhat less than five millions. About nine millions of pounds are now lying in our ware-

houses,

Letter to Bombay, 29 Aug. 1810.

houses, which have passed the sales but were principally bought in by the original consignees; and upwards of fifteen millions of pounds are further on hand, but for which there appears no prospect of a demand on the part of the manufacturers but for a great length of time, possibly some years to come.

10. In addition to which, further importations on the part of the Company will be received.

11. In this unfavourable state of the case, we have seen it proper to bring the subject under the consideration of His Majesty's Ministers, and to point out that partial relief would be granted by allowing cotton-wool to be exported to any place where goods are allowed to be exported by license; and further, that as Indian cotton-wool is, upon an average, of less than half the value of other cotton-wool, Government should be pleased to countenance a petition to Parliament, to be presented in the next session, praying that for a limited time Indian cotton-wool may be used by the British manufacturers without payment of any duty, and that the future duty to be paid thereupon may be in proportion to its lesser value compared with other cotton-wool. But to this we have not yet received a reply.

12. Experience of many years has convinced us, that the Company should steadily persevere in their commercial pursuits, and not abandon any branch of their regular investment upon a temporary

rary unfavourable change in the market; but as the article of cotton-wool has not hitherto formed a part of our regular investment for Europe, it will not be consistent with commercial policy for us to persevere in the importation of Indian cotton-wool into England, if the British manufacturers continue to manifest so adverse a disposition to the use of it. The first consignment of private cotton which was made from Tinnevelly to China was so greatly approved, that we hoped an extensive trade would arise in that commodity; but we have observed with concern, that the falling off has been experienced in the quality of that cotton. However this may be, we indulge in the expectation that the considerable investment of Tinnevelly and Salem cotton, which is now in the course of provision, will be of approved quality, and we have desired that some of the best Tinnevelly cotton, and of the longest staple, should be consigned to London, where it may possibly enter into a competition with American cotton of the finer assortments. Letter to Bombay, 29 Aug. 1810.

14. There is another point to be noticed on this subject as a matter of complaint, but for which the remedy is so obviously in our own power that no excuse will hereafter be admitted by us for its continuance, and that is, the foulness, dirt, and seeds, which are suffered to remain mixed with the cotton. It is desirable that the cotton should be cleaned from those impurities, as a means of saving

 freight

No. 23.

EXTRACT LETTER *from the Court of Directors to the Governor in Council at Bombay, dated the 1st November* 1811.

Letter to Bombay, 1 Nov. 1811.

Par. 6. The two bales of cotton which are referred to in these paragraphs have been shewn to several very competent judges of this commodity, who are of opinion, that the switching is not of the least advantage, that the staple does not appear in any respect better than if it had been prepared in the usual manner, but rather the contrary; and that, upon the whole, the cotton is of less value than it would have been if not switched. We observe by your Consultations of 6th November 1810, that an expense of Rupees 24. 2. was incurred for hand-picking these two bales; but we are under the necessity of noticing, that the operation has been ill-performed, the bales being very full of pieces of seeds or leaves.

7. As the cotton must, of course, be improved by being rendered more free from seeds and extraneous matters, we shall endeavour to send you out, in the course of the present season, musters of such machines as are in use for cleaning cotton in the West-Indies and America.

We are gratified in observing that you have added the pergunna of Chowrassy to the other districts which have for several years paid their

revenue

revenue by a delivery of cotton instead of specie, "which will ensure, in time to come, the most "unexceptionable product, as well for China as "for Europe consignments, without the necessity "of again entering on behalf of the Company "into the details of indiscriminate purchases, "either in competition or connection with any "individuals." Letter to Bombay, 1 Nov. 1811.

15. In our advices of late years, we have frequently had occasion to notice the fluctuations of this branch of commerce. In the year 1809, the state of public relations with America seemed to render the importation of Indian cotton of the greatest importance to the British manufacturer, and large consignments were made in consequence of our orders and the encouragement held out to the private merchants; but before the arrival of the consignments could be effected, the face of public affairs had changed. American cotton had been imported as before, and the Indian cotton now remains a ruinous and unproductive burthen, both upon the Company and the private importers.

16. As we have noticed this unfavourable event in our former despatches, it only remains that we repeat our instructions, that no Indian cotton-wool be sent to England upon our account in 1812-13.

No. 24.

Extract Letter *from the Court of Directors to the Governor in Council at Bombay, dated the 27th November* 1811.

Letter to Bombay, 27 Nov. 1811.

Par. 2. There is a consideration connected with the subject of Indian cotton-wool which may lead to an important result, by enabling us to import for the use of the British manufacturers cotton-wool of an improved fineness and of longer staple, and of course more suited to their wants.

3. It is our intention to request that His Majesty's Ministers will issue instructions to the Governor of the Isles of France and Bourbon to consign to our respective presidencies such a sufficient quantity of the seed of the cotton-wool which is produced in the Isle of Bourbon, together with a short statement of its mode of cultivation and the nature of the soil to which it is best suited, as may enable our Governments to make a decided experiment, to ascertain whether a considerable quantity of cotton-wool of good staple cannot be speedily grown in India, which may be equal to American cotton in all respects.

4. We are not unmindful, that the experiments which have heretofore been made to cultivate Bourbon cotton in India have not been attended with much success; but as those experiments may not have been prosecuted with perseverance, or possibly

possibly with a sufficient knowledge of the natural history of the Bourbon cotton, we have resolved on the measure now communicated to you.

Letter to Bombay, 27 Nov. 1811.

5. As cotton-wool of a quality equal to that of Bourbon may be expected to produce in London the price of two shillings per pound at the least, when the common cotton of India will not at the same period produce more than nine-pence, and as the freight of about four-pence per pound in time of war on the extra ships falls equally upon each kind, notwithstanding the inequality of their value, it is presumed that the encouragement held out to the finer cotton in the freight only, may ensure its success as an article of cultivation, unless prevented by natural causes which are not at present known to us.

No. 25.

EXTRACT LETTER *from the Governor in Council at Bombay to the Court of Directors, dated* 30*th May* 1812.

Letter from Bombay, 30 May 1812.

Par. 39. The samples of cotton referred to in the paragraphs were received per *Exeter*, and found to consist of four parcels marked No. 1, No. 2, No. 3 L. A. Privilege, and No. 4 Grenada, which were immediately distributed among the several Collectors and Commercial Residencies under this presidency, for their remarks, inclusive also

Letter from Bombay, 30 May 1812.

also of the authorities in Salsette, whose particular attention was called to the seventh paragraph of your Honourable Court's dispatch.

40. Your Honourable Court's observations were also communicated to those authorities respectively, with directions to inculcate amongst the cotton-growers more attention to the improvement of the quality of that product, particularly in respect to cleaning it, as to which it was signified that a small additional expense for the promotion of so beneficial an end would not be incurred with much reluctance. With the samples, manuscript copies of the printed directions for the culture of cotton in Africa, were forwarded, of which accurate translations were likewise ordered to be distributed by the Collectors, on all the heads that could be applicable to the rearing of cotton within their respective limits; particularly in regard to the period for picking or collecting it in the most cleanly state after it is fully blown, and its being subsequently freed from all motes, broken seeds, &c., as well as respecting the great care that should be taken to prevent a mixture of the different kinds of seed in planting, and the processes for beating the dirt out of the cotton, and of separating the wool from the seed.

41. Your Honourable Court will observe from the report from the Collector at Broach, that every attention has been bestowed to promote your wishes in respect to the cleanliness of the *kupas*, or

or rough produce, previously to its being delivered over to the Surat Commercial Resident, whilst, with regard to the samples of cotton, and the directions for the culture of the article as prevalent in Africa, it will be remarked that they were considered but little applicable to the cotton-growers in Guzerat, for should any interference take place in regard to the sowing-time (confined as the period already is for ripening and shipping-off), which, from experience, was considered to be the best after the first fall of rain, much opposition would certainly be met with from the cultivators, and late crops would be th einevitable consequence.

42. The same consequences would result were the means to be pursued as pointed out in Georgia and Carolina, where it would appear incessant labour is required in ploughing, harrowing, forming ridges, and trenching the ground; as also in Demerara and Berbice, where every field is geometrically laid out, the distance and depth of the holes, &c.

43. In short, it would appear that the system recommended would by no means answer, nor could it be brought into practice over a large extent of country, especially with Indian cultivators, who have always been noted for their very simple modes of agriculture. These objections, inclusive also of the other observations detailed in the Report under consideration, will no doubt

satisfy

satisfy your Honourable Court, that the local causes that operate against the introduction into the East-Indies of the better modes of cultivation, which are practised in other countries, and in those in particular where the labour of slaves is procurable, are insurmountable.

44. The second Assistant then in charge of the Commercial Residency at Surat submits it as his opinion, that of the four musters, the bowed Georgia cotton would appear to shew a decided superiority, both in cleanness and colour, even over the Company's *thomil*, with which your Honourable Court have compared it, whilst the Grenada and Bombay privilege cotton seemed of nearly equal quality; that any improvements which could be introduced into the country, are not so much in the immediate culture of the cotton-shrub as in the after-processes of gathering and cleaning the wool. The former, he observed, must be drawn from actual experiments and observations made in the country, but the latter required only particular attention in the selection of the *kapas*.

45. The dry soil and climate of Guzerat are very favourable to the cotton-plant, for it is found to grow in the most sterile districts, though less luxuriously; and the great demand and consequent high prices given of late years, have contributed much to the more extensive cultivation of the commodity, particularly further to the northward.

46. The

46. The cotton-seed at Surat, which is all of the *black kind*, is sown annually in drills, at the distance of about one foot between each plant, after the first rain (say in July), the ground having been previously well cleaned and all the roots of the former crop carefully grubbed out, after which it arrives at maturity without any further care. Ground which has been one year in fallow is always found to produce more abundantly.

47. There are three gatherings of cotton in one season. The first commences from the middle to the end of February, and yields always the finest wool, being the pods taken from the tops of the shrubs; the second, fifteen days later, is inferior; and the third inferior to the second, and is pulled from the lower part of the bush.

48. We have particularly to point out to your Honourable Court the seventh and eighth paragraphs of the letter under consideration, as specifying the rude and imperfect means used here for cleaning cotton.

49. We are informed by Mr. Forbes that the cotton-wool is separated from the seed by a hand-machine, called *chirkhaw*, not unlike a gin. This process, he believes, is not of much injury to the staple. Two men are employed in working a *chirkhaw*, and seldom clean more than half or three-quarters of a maund per day.

50. The succeeding process of bowing, switching, or beating the cotton, to free it from leaves, dirt,

dirt, &c., are all disapproved of, as being very destructive to the fibre of the staple, and if the cotton is not previously picked and cleaned (at an expense of Rs. 20 or Rs. 30 per candy), the commodity is very little improved. Bowing alone costs Rs. 10, and switching or beating Rs. 4 per candy, and the great expense of hand-picking the cotton renders the general use of that system impossible.

51. The means of improving materially the quality of the Honourable Company's cotton rested, in Mr. Forbes' opinion, with the Collector at Broach, by insisting on every village delivering a portion of good clean cotton; and although the *other quality would be no doubt inferior, it would* still answer for the China market.

52. Were the ryots positively enjoined to pay every attention to the gathering of the cotton, and as observed in the printed instructions, directed to put the clean, well-coloured, and ripe part into one bag, and the leafy, dirty, bad-coloured and unripe, or that which is not easily separated from the pod, into another, we should, Mr. Forbes thinks, have some cotton of a very superior quality indeed, whilst the additional trouble would be nothing, and the process most simple.

53. Your Honourable Court will observe, that of about one hundred and fifty villages which pay their revenue in cotton to the Honourable Company, there are only eight which deliver *thomil;* whereas

whereas Mr. Forbes considered it would be of the first importance, particularly if Government continued their exports of cotton to Europe, to insist upon all the villages delivering an equal proportion of that description.

54. Mr. Forbes having recommended, in his above noticed report, the annual importation of a quantity of cotton-seed from Bourbon, the wool of which is so much superior to any other, together with an account of the cultivation, and particularly the processes in use there for gathering and cleaning it, an application was accordingly made to the Government of that island in conformity to his suggestion.

55. *A supply of cotton-seed having been lately* forwarded in consequence of this requisition, it has been distributed among the Collectors at Surat and Broach, with copies of a memoir regarding the culture of the article at Bourbon received at the same time, with authority to take measures for sowing it to a small extent under each Collectorship on the Company's account, delivering any surplus which may remain to such of the ryots upon whose care they may depend for affording it a fair trial.

56. With respect to the observations contained in the seventh paragraph of your Honourable Court's letter, in regard to rearing cotton on Salsette, it will appear from a report from the Judge and Magistrate, and Acting Collector on that island,

island, that they entertain no doubt of there being much land on Salsette which, according to the description contained in the printed directions forwarded by your Honourable Court, is well suited for the cultivation of cotton, as all the soil in the hilly districts seems to be of that nature; that Bourbon plants of cotton are partially flourishing in hedge-rows and elevated spots where the earth is free, but notwithstanding this favourable circumstance, every attempt that has been made to cultivate this production on Salsette has failed. Doctor Scott, a proprietor of land in the island, had once many acres in cotton, but after a few years he gave up the cultivation; and they have been given to understand that it has since been tried by the late Ordasee Dady and Hormasjee Bomanjee, also proprietors of land there, who have both expended much money with no better success.

57. These failures are attributed to the same cause as those which have rendered many of the agricultural speculations in India abortive. The Hindoo labourer will never yield any adequate return for his wages when employed in agricultural concerns, even with the utmost vigilance of the farmer. The severe labour of working the soil, and every other duty incident to this calling, require a very strong interest to induce that attention to it which is absolutely necessary. This is entirely wanting in the day-labourer; nor is there any

any circumstances in his connection with his employer which gives him motives either of sympathy or dependence, which might excite in him sufficient attention to the work he is engaged in. It is different in manufactures, where the labourer employed is under the more immediate inspection of the master.

58. The cultivators in small farms of the soil of Salsette are stated to evince such a deplorable apathy and indifference to their lot in life, as to operate as a bar against prevailing on them to attempt, on their own account, a cultivation with which they are unacquainted. They have barely the means of providing for their families and paying their rents; they are incapable of enjoying any satisfaction which arises from new and successful pursuits; and it would be difficult to persuade them to hazard even the miserable provision they are now certain of, in the hope of obtaining a better one by any new or speculative undertaking.

59. If Government, however, should still be desirous of attempting the cultivation of cotton on this island, the plan they recommend was, that a small spot of well-chosen ground (not more than one acre) should be placed under the direction of a person of competent knowledge, zeal, and activity in agricultural pursuits, and that he should attend to the cultivation of cotton according to the directions sent from England. One-half of the land devoted to this experiment might be irrigated

irrigated so as to cause some variety in the outset of the attempt. It would be attended with very little expense, and if persevered in until the result should be satisfactorily ascertained, it might be attended with advantage, and gradually induce the more adventurous inhabitants of either Bombay or Salsette to apply their industry in a similar manner.

60. Agreeably to the recommendation submitted by the Judge, Magistrate, and Collector, a person well qualified has been entrusted with the experiment they suggested, a convenient spot of ground having been set apart for the purpose, and a supply of seed procured from the northward, and we shall not fail to communicate to your Honourable Court, as soon as possible, a report of the result of this undertaking.

No. 26.

EXTRACT LETTER *from the Court of Directors to the Governor in Council, Madras, dated the 7th May* 1813.

Par. 4. We are altogether convinced of the soundness of the policy of paying attention to an increased cultivation of cotton in our territorial possessions, and especially in the Tinnevelly districts, as also to the northward of the Ceded Countries. The mixed and dirty state in which Indian

Indian cotton is at present brought to Europe greatly depreciates its price, as well as increases the freight and duties paid to Government, the extraneous matters being necessarily weighed in with and accounted for as cotton.

5. With a view of obviating these defects, we have some time had it under consideration, as you have been apprized, to send to India some American machines for cleaning cotton, models of which we are now in possession of, and shall resume this part of the subject by our next despatches.

6. In furtherance of this object, we have engaged in our service Mr. Bernard Metcalfe in the capacity of an Assistant in the Commercial Department, and who is to be employed under the direction of your Commercial Residents, at any of the factories in the Ceded Districts, Tinnevelly, or wherever you may consider his services can be most useful.

7. Mr. Metcalfe has resided several years in the province of Georgia and in New Orleans, in the capacity of a merchant and cleaner of cotton for hire, and we have been informed that he is a person of credit and respectability.

No. 27.

EXTRACT LETTER *from the Governor in Council at Bombay to the Court of Directors, dated the 15th October* 1813.

Par. 38. As it was understood that cotton of a superior quality was produced in Persia, Mr. Bruce was directed to afford all the information he could obtain respecting it, and he has, in consequence, sent a sample to the presidency, which on examination has been found of a quality equal to the worst part of the produce of this country, and higher in price; we have, in consequence, refrained from the adoption of any further proceedings for obtaining cotton from Persia of that description. In case the brown (nankeen coloured) cotton could be procured from thence at a reasonable price, it would probably prove an acceptable commodity for the manufactures in Great Britain, and we shall direct Mr. Bruce to furnish all the information he may be able to obtain on this subject, of which your Honourable Court will be hereafter apprised.

39. With regard to the cotton produced in the neighbourhood of Porebunder, the samples forwarded to the presidency were not, on a careful examination, found of superior quality, or procurable at a price that rendered it an object to your Honourable Court to have recourse to that part of

of the country for supplies of that article; we have therefore relinquished every intention of procuring supplies from thence.

No. 28.

Extract Letter *from the Court of Directors to the Governor in Council at Bombay, dated the* 3d *June* 1814.

Par. 19. We do not desire that any cotton should be laden on the extra ships now consigned to you, except two or three hundred bales of the very best and cleanest toomeel cotton, which experimental quantity it may be proper to keep regularly in our annual Europe investment.

No. 29.

Extract Letter *from the Court of Directors to the Governor in Council at Bombay, dated the* 22d *December* 1815.

Par. 17. We have at various times had under our consideration the proposition brought into discussion by Mr. Brown, of consigning cargoes of Surat cotton regularly to England, but have not hitherto seen it proper to adopt such a measure permanently, although we may hereafter very probably do so. You may, without any apprehension of

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of not acting in accordance with our ideas, fill up with good clean cotton any vacant tonnage of our ships which may at any time be at your disposal.

18. We attach very particular importance to the object of improving the quality and staple of the Indian cotton, so as to render it fit for the general consumption of Great Britain, and have therefore observed with regret that the dangers of navigation have caused you to lose a considerable supply of cotton-seed sent from the Islands of Bourbon and the Seychelles.

No. 30.

EXTRACT LETTER *from the Governor in Council at Bombay to the Court of Directors, dated the 24th February* 1816.

Bourbon Cotton-seed.

Par. 87. After the observations communicated in our despatch of the 10th June last, your Honourable Court will learn with regret, that before the receipt of our instructions to the Agent at the Mauritius to discontinue his purchases of Bourbon cotton-seed, he had made engagements for another year's supply, and considering the expense of its conveyance to India would be likely to be greater than would be desirable to incur, since the result of the experiments hitherto made have been so unpromising, we lost no time in instructing

Mr.

Mr. Roworth to dispose of the seed to the best advantage, rather than incur the further expense of freight.

No. 31.

EXTRACT LETTER *from the Governor in Council at Bombay to the Court of Directors, dated the 17th April* 1816.

Par. 35. The Collector of Coranja having failed in his endeavours to prevail on the ryots to cultivate a portion of the land with the Bourbon cotton-seed sent to him for that purpose, undertook the experiment himself, and having forwarded a sample of the produce, it has been reported to be superior, in every respect, to any cotton produced in the Broach pergunnas with which it had been compared.

36. We have directed the Collector to submit an estimate of the expense of cultivating a begah of land with Bourbon-seed, and of the probable out-turn, acquainting him at the same time, that we had no objection to an application he had preferred for a quantity of waste land being assigned to him, to enable him to undertake, at his own risk, the cultivation of this valuable shrub, the introduction of which into the neighbouring islands would be an object of great importance. Should Mr. Marriott succeed in the cultivation, the

the natives, we make no doubt, will readily engage in the cultivation.

65. The ryots seem but little disposed to cultivate the Bourbon cotton within this pergunnah, which is, however, reported to be in other respects unfavourable to the experiment, and we have it not in contemplation to prosecute the cultivation, especially at the high price hitherto paid for the transport of the seed from the Mauritius.

90. The cultivation of the Bourbon cotton has been also attempted within the Kaira jurisdiction. Of 4,750 begahs that had been sown with the seed, 2,186 begahs promised (report dated the 31st December last) to insure its successful introduction, notwithstanding the disinclination which the ryots manifested to undertake the experiment. By a subsequent report, however, we have been informed of a considerable failure having taken place, and which is attributed to an essential difference in the nature of the Guzerat and Bourbon plants. The former, under the most favourable culture and season, never exceed two or three feet in height, it has but few or no shoots or branches, and a limited number of pods; while the latter grows into a large shrub, greatly exceeding, even during the first season, the plant indigenous to the country, expanding its branches richly laden with cotton to a great distance around it. The plant of Guzerat comes to its greatest perfection and yields its cotton in the space of six months.

months. The Bourbon shrub is of a durable nature: it lasts for a series of years, and is not in a state of full vigour till after a period of eighteen months. The difference of nourishment which these two shrubs must require, plainly and satisfactorily accounts for the opposite success which has attended their culture during last year. The moisture that remained in the ground proved nearly sufficient to bring the one to its usual state of perfection, and fully so to mature a diminished return of cotton. The same moisture produced the other shrub, but though apparently healthy, of a very stunted growth. It was even sufficient to produce the blossoms, but failed almost entirely at the time when its aid (cramped as the efforts of nature were by the dwarfish condition of the plants) was of the greatest importance.

91. The conclusion which the very essential difference in the nature of this plant suggests, adds great weight to the recommendation of Mr. Gilder, to give the Bourbon cotton a further trial during the next year, in lands which have the benefits of irrigation. A consideration, too, of the climate of Bourbon would also seem to suggest the propriety of making an experiment of this mode of culture, and which we have accordingly authorised, to an extent which will not expose the Company to any great expense.

No. 32.

EXTRACT LETTER *from the Court of Directors to the Governor in Council at Bombay, dated the 12th June* 1816.

Par. 2. In our letter of 1st November 1811, paragraph 7, we informed you that we should endeavour to send out in that season musters of the machines used for cleaning cotton in the West Indies and America, but no such machines or models of them could be found in England; and when we afterwards procured two from Charlestown, they appeared to be so rude and imperfect, both as to material and efficiency, that we committed them to a very ingenious mechanic, with instructions to make without delay, for each of our presidencies, two gins of an improved construction; but we have not until this season been able to obtain them in a finished state. Two of the improved machines, made of metal, are now shipped for your presidency on the Alexander: one of them is adapted to the cleaning of black-seed cotton and one for the green-seed.

3. The two original wooden machines (one likewise for black-seed and the other for green-seed cotton) have, with two of the metal gins, been sent to Madras. As Mr. Bernard Metcalfe, who in the year 1813 was appointed an Assistant there in the Commercial Department, is well acquainted

acquainted with the nature and uses of the machines from America, our Government of Fort St. George will, if required, furnish copies of his instructions and observations on the subject, for the guidance of the persons at your presidency in the provision of the cotton investment.

4. The object in view, which is to enable you to ship cotton in a clean state, being of material importance, you will not fail to cause a sufficient trial to be made as to the utility of the gins, and should the metal ones fully answer, the number may be increased by constructing them in India, or by indenting on us for such as may be wanted.

No. 33.

EXTRACT LETTER *from the Court of Directors to the Governor in Council at Bombay, dated the* 4*th December* 1816.

Par. 12. The construction put upon our orders respecting the duties on cotton, in our Governor's Minute recorded on your Revenue Consultations of the 26th July 1815, is substantially correct, and we direct you to be guided by that construction, *viz.* that cotton-wool, the produce of any part of India, shall be allowed a drawback of the whole internal and sea duties, when exported on British or Indian registered ships trading directly or circuitously

circuitously with the United Kingdom, but that this allowance is not to extend to any port or settlement in Asia.

No. 34.

EXTRACT LETTER *from the Governor in Council at Bombay to the Court of Directors, dated the 18th December* 1816.

Par. 29. Previous to our receiving your Honourable Court's commands respecting Mr. Metcalfe, we were informed of the proceedings which had been adopted at Madras for the attainment of the objects on which he was sent to India, and of the little success with which they had been attended, and desired by that Government to apply for his services, if it appeared to us to be likely they could be employed with advantage within the territories subject to this presidency; but concurring with the Commercial Resident and the Collector of Broach, to whom the subject was referred, we declined to avail ourselves of his services, since it did not appear that they could be of use, the quantity of cotton now received as revenue being so small as not to render it of great importance to introduce the measure with a view to benefit the Honourable Company, and the ryots deriving too much benefit from cleaning the cotton they are at liberty to sell, to relinquish the privilege,

privilege, as without the trouble and expense of purchasing seed, they are thereby supplied with what is necessary for planting and with food for their cattle.

30. The system now observed of cleaning the Company's cotton is as follows. The *kupas* to be cleaned from the seed is delivered to a set of men called *bhukaries*, who have been at a considerable expense in erecting *bhukars* (or warehouses) for the receipt of it, and after being placed in their hands they are responsible for the redelivery of clean cotton agreeable to an annual fixed rate. A vast number of indigent men and women, who flock from various parts of the country every year to the district of Broach, bringing with them a *churka* or cleaning-wheel, are taken into the service of the bhukaries, who pay them a trifling amount regulated by the weight of the cotton-seed which each turns out daily; and, from the general character of the people, there is reason to fear that an attempt on the part of Government to introduce any other machinery for cleaning *kupas*, than that which is now in use, would be (as was the case within the Government of Fort St. George) altogether abortive, while it cannot be expected to be freed from the seed better or cheaper than by the present process.

31. With respect to the large quantity of cotton which is annually purchased for the supply of the China market, it is already well known to your

Honourable

stance of a great proportion of the seed having been damaged. Considering, therefore, the important advantages which may be derived from a successful cultivation of the Bourbon cotton within our territories, we have pleasure in observing, that you were not discouraged by the little success of the first attempt in Kaira from directing further trials to be made in that district and in the Broach pergunnah, on a soil where the facilities of irrigation might obviate the difficulty, in a season of drought, of bringing the plants to maturity. As an experiment seems to have been made with more success by the Assistant Collector in charge of Caranjah, it occurs to us that similar experiments may with propriety be continued, both in that island and Salsette, or in our recently acquired possessions of Fort Victoria and Malwan, on the slopes of hills sheltered from violent winds from the sea, and also on other grounds possessing the means of artificial irrigation, and also sheltered from violent sea winds, if such situations can be found.

No. 37.

EXTRACT LETTER *from the Governor in Council at Bombay to the Court of Directors, dated the* 20*th December* 1817.

Par. 52. In our despatch dated the 18th December 1816, we notified our intention of ascertaining by

by experiment, whether or not the machines for cleaning cotton, sent out by your Honourable Court, could be advantageously used in the preparation of your investments.

53. The result of the trial which accordingly took place was reported by the Warehouse-keeper *on the 2d April, and we regret it has proved un*favourable to the further use of the machine. The expense of working the machine, and the injury it causes to the staple, are the objections stated. It was found that five men were able to clean no more than two pounds of *kupas* in a quarter of an hour, and the effect upon the staple is similar to that of cleaning with the bow, which renders it altogether unfit for the China market. Instructions have been given for cleaning a bale by means of the machine, for consignment to your Honourable Court, that you may have an opportunity of ascertaining the opinion of the manufacturers on this point.

54. On the 24th November Mr. Goodwin reported to us that he had prepared a bale of 36lb. gross weight of toomil cotton. We directed it to be shipped in the Carmarthen and marked as per margin.

55. We are sorry to observe, that this further experiment does not afford any encouragement to the use of the machine. Though worked by twelve men for five hours, only 14 lb. of cotton were cleaned, whereas the common Guzerat *churka*, worked

mitted, has given his opinion, "that it is fully "equal to any produced in Bourbon, and that it "would fetch 2*s*. 3*d*. sterling per lb. in Europe."

8. We have therefore thought it advisable, without waiting for the extra ships, to consign the cotton thus produced to your Honourable Court by the Albinia free-trader, in order to guard it from the injury which might follow its detention here during the monsoon.

10. Encouraged by the successful result of this experiment, we have authorized the Collector in the Eastern Zillah to prosecute for another season the cultivation of the Bourbon cotton to a certain extent, at the expense of Government, through the medium of the *Tullatics*, and as a stimulus to their exertions have authorized premiums to be given in the following proportions:

1st. The person who shall produce the greatest quantity of cotton of approved quality, by a given period in the years 1819 and 1820, from a given quantity of ground, shall be entitled to a premium of Rupees 200.

2d. To the person who produces the next greatest quantity, Rupees 150.

3d. To the third successful candidate, Rupees 100.

4th. And to the fourth, Rupees 50.

11. The pretensions of the candidates to be decided by the Committee, to consist of the Judge, the Collector, and Mr. Gilder.

12. The

12. The example thus set will, it is hoped, lead to the cultivation of the Bourbon cotton by the ryots generally; and, as a further inducement to them to do so, we have guaranteed to them a sale for all cotton of this description of an approved quality, at the rate of ten rupees per maund. This rate was offered by the Ahmedabad weavers for the cotton produced this year by Mr. Gilder, and is considered the very lowest at which it can be sold, and which we understand the merchants would readily give for a commodity of so superior a quality.

Malwan.

13. A satisfactory report has been received from Mr. Hale, at Malwan, of an experiment made in the cultivation of Bourbon cotton at that place, but we have not received the cotton thus produced.

15. If a supply of the seed of the Pernambuco cotton could be procured and sent out to India, with information of the mode observed in its cultivation and the nature of the soil in which it is produced, it would enable us to ascertain the practicability of introducing its growth into this country. The expense of the experiment would be trifling, compared with advantages which must result from the cultivation in the British territories in India of cotton of so superior a staple.

No.

No. 39.

EXTRACT LETTER *from Mr. Gilder to Captain A. Robertson, Collector of the Eastern Zillah north of the Myhee, Kaira.*

Sir:

I have the pleasure to forward you a short report on the experiment of the culture of a few begahs of Bourbon cotton, over which, from the peculiar interest attaching to the result and the facility my vacant hours afforded, I offered my superintendence. On a former occasion I submitted my opinion of the causes that led to the failure in the attempt to introduce this valuable cultivation into the Western Districts: the obstacles I considered exclusively physical, arising from peculiarity of soil, and the unprotected exposure of the plant to the intensity of the hot winds.

2. I stated on this occasion, that both the soil and the climate of the districts lying between the Subermuttee and the Myhee promised a more favourable result. The greater portion of the soil is of the light sandy nature recommended by the cultivators of the Island of Bourbon, and the general division of the country into enclosures, protects the plant materially from the influence of the hot winds, which are considerably milder than on

on the plains to the westward. The facility, also, which this division presented for irrigation, if necessary, was an object of the greatest importance.

3. To submit the foregoing opinion to the test of experience, you recommended the culture of the plant upon a small scale, but sufficient to ascertain the object without incurring any considerable expense. The charges incurred ought not to be received as any criterion of the actual expense the cultivation would require: indeed I feel convinced, that three-fourths of the sum would be fully adequate to the purpose; but it was not the object in the first instance to control the expenses, but to ascertain from practical experience the capability of the soil and genial influence of the climate to the success of the plan. These grand data once established, the expense of cultivation will naturally find its level with every branch of agriculture. Averse as the natives are to every attempt at innovation on established customs, they are not less attentive to their own interests when fairly and decidedly brought to their notice. If we can fully establish the advantage of the cultivation of Bourbon cotton, we may confidently expect its extensive introduction under the patronage of the Company's government, at all times willing to encourage, rather than repress, the speculative industry of its subjects.

4. Admitting

4. Admitting the climate and soil of this part of Guzerat to be favourable to its cultivation, it has a decided advantage over the Island of Bourbon, in not being liable to those changes to which the climate of all islands, and more particularly mountainous ones, are subject. For instance, in Bourbon, when the cultivator expects to reap the fruit of his labours, a sudden and heavy fall of rain takes place when the cotton is ripe for gathering, and nearly destroys the whole.

5. The spot selected for the trial was chosen from its local convenience for superintendence: the soil a sandy loam, the general character throughout these districts. It afforded the means of irrigation; but these were not availed of, as it appeared desirable to ascertain the product of the soil without such assistance, which would have added very materially to the expense of cultivation, independent of the difference of rent of the land, which, if possessing means of irrigation, averages ten rupees per begah; if not, four rupees per begah is a fair estimate. The seed was sown in rows, distant three feet from each other, preserving the same distance of plants in each row. The sowing commenced at the end of July 1816, after the first heavy rains were over. Bejaree was sown by drill, in the usual manner, at the same time with the cotton. The sowing of Indian corn with the cotton is recommended at the Isles of France and Bourbon, as affording protection to the tender

tender plants from the heat of the sun until the grain be ripe, by which time they have acquired sufficient vigour. In the present case the bejaree answered the purpose equally well; and as the plant yields no return the first season, the crops of bejaree ought to pay the expense of rent and cultivation.

6. The after-rains of 1816 were very scanty, and the plants remained in an apparently sickly and dwindled state until the rains of 1817, when they put forth most luxuriantly; so much so, that it was found necessary to remove every alternate plant, which left a space of six feet between each: still they were subsequently too crowded. I think eight feet would be a good distance. The flowering commenced early in September, and the cotton began to ripen in November. The gathering of the first crop was finished by the middle of January: a second crop may be expected in the month of May, but I imagine a very scanty one. Opinions are divided on the Island of Bourbon, whether the plant should then be cut down or simply left to the operation of nature. The preference can only be decided by experience, and I would, of course, recommend that one-half of the plantation be pruned, leaving the other to its natural state.

7. There are two kinds of cotton cultivated in Bourbon; one producing a black seed, which is very easily detached from the cotton; the other a

white,

white, adhering so firmly to the staple, that the latter is torn from it, leaving the ends of its fibres in the seed, which gives it the white appearance. No sample of the white seed has been hitherto received. The culture of cotton has been introduced in the Islands of Bourbon and Mauritius within the last thirty years. It would be desirable to know from whence the seed was originally imported: in all probability it came from some of the French West India Islands. It is not unreasonable to infer, that the Pernambuco Sea Islands, and other superior descriptions of cotton, might be successfully cultivated in this province. The object appears to merit a trial, which experience proves may be done at a very trifling expense.

The culture is equally simple with that of the common cotton of the country. A few plain directions might be furnished to each *Tullatee,* who would be instructed to explain them to the villagers. To ascertain the irrigation, fifteen begahs of the twenty in some of the villages might have that advantage: the result would be decisive, as the same soil would be subject to different modes of culture.

Dr. TERRITORIAL ACCOUNT—BOURBON COTTON CULTIVATION. *Cr.*

1816-17..	Expenses of cultivating 27 begahs of cotton........	93	0	45	1816-17..	By amount of bejaree........	66	3	0
	Rent of 27 begahs at 4 rupees	108	0	0	1817-18..	By value of 180 maunds of seed, at 1½ maund per rupee................	120	0	0
1817-18..	Expense of gathering the cotton	81	2	17		Amount of 44½ maunds of clean *cotton*, at 10 rupees per maund.............	445	0	0
	Rent at 4 rupees per begah ..	108	0	0					
	Charges for extracting seed, at 1 rupee per 3 maunds seed..................	60	0	0					
Feb. 28th.	Balance..................	181	0	38					
	Rupees	631	3	0		Rupees	631	3	0

True Copy:

(Signed) A. ROBERTSON,
Collector.

Kaira, 28th February 1818.

(Signed) J. GILDER.

No.

No. 40.

LETTER *from the Resident at Malwan to Mr. Chief Secretary Warden, dated the 28th February* 1818.

Sir:

Adverting to my former reports on the subject of the culture of Bourbon cotton in this part of the country, I have the satisfaction of acquainting you, for the information of the Right Honourable the Governor in Council, that the experiments I have made, during the last monsoon and the present dry season, have been entirely satisfactory, and that I have established the fact of being able to produce it in the districts under this Residency, to any extent, as far as any natural impediments offer, though the prejudice of the natives is still far from being overcome.

2. Such quantity of seed as I was possessed of on the setting in of the monsoon, I distributed to all those whom I found willing to cultivate it, and the result has been, that in the month of November a luxuriant crop of cotton was produced, without the necessity of irrigating the plants; and subsequent to that, with the aid of water, which is supplied with great facility, a succession of crops have been obtained, and will continue I believe till the rains.

3. Though, from the small quantity of seed I had obtained last year, I fear there is no chance of

of procuring this season sufficient cotton to make it worth sending to the presidency, yet as a few bags can no doubt be had, should the Right Honourable the Governor wish to have it in such inconsiderable portions as may merely suffice as samples to England, it would be a satisfaction to me to be permitted to forward it for that purpose.

4. I beg leave to request, at the same time, I may be furnished with such implements as are used to the northward for the purpose of extracting the seed of the cotton, the operation of hand-picking being so tedious as to act as a great drawback with the ryots in cultivating it, and I have not a sufficient accurate recollection of those I have seen to have them made here; and as I have now sufficient seed for the whole of these districts the ensuing season, I am desirous that no disadvantages attending the cultivation of this valuable plant should present themselves.

I have the honour to be, &c.

(Signed) V. Hale, Resident.

Malwan Residency, 28th February 1818.

No. 41.

Extract *Bombay Consultations, the 26th March* 1818.

Read the following letter from the Warehouse-keeper, dated the 26th ultimo, to Mr. Chief Secre- 2
tary

tary Warden, with enclosure, reporting favourably on the quality of the five bales of cotton raised at Dollera from the Bourbon seed, under the superintendence of Assistant Surgeon Gilder.

Sir:

I have the honour to enclose, for the information of the Right Honourable the Governor in Council, the copy of a report on the cotton recently consigned by the Commercial Resident of the Northern Factories to the presidency, as well as on five bales of cotton raised at Dollera, from seed procured originally from the French Islands and sent to the presidency by Captain Robertson.

It is gratifying to me to have it in my power to acquaint Government, that I am assured by Mr. Sollier, the Supra-cargo of the French ship Bourbon, to whom I have shewn the cotton reared at Dollera and solicited his opinion with regard to its quality, that it is fully equal to any produced on Bourbon, that it would fetch 2s. 3d. per lb. English in Europe.

I transmit herewith samples of Bourbon and first Thomil cotton for the inspection of the Members of Government.

I have the honour, &c.

(Signed) R. T. Goodwin,

Wk. & C. A.

To R. T. Goodwin, Esq., Warehouse-keeper.

Sir :

We have, in compliance with your request, assembled this forenoon to examine and report upon the cotton alluded to in your letter, and have accordingly inspected the several sorts, (viz. first and second thomil and first rassee, as well as the Jamboosecr and Occlaseer revenue,) all of which appear to be of a good quality and staple and to be well cleaned. We beg, however, to observe, that there is scarcely any difference between the second thomil and first rassee.

We have also examined five bales of cotton raised from Bourbon seed at Dollera, and consider it of excellent quality. It is very much superior to the first and second thomil and well adapted to the Europe market.

We have, &c.

(Signed) Farmjee Cawajee,
Hormozjee Dorabjee,
Porshotum Bhowan.

Bombay, 25 March 1818.

No. 42.

Extract Letter *from the Court of Directors to the Governor in Council at Bombay, dated the 27th November* 1818.

Par: 33. The three bales of cotton which you consigned to us per Carmarthen, 1817-18, described as Bourbon cotton second-growth Guzerat, have been reported to be "of tender staple, as is "usual in cotton raised from Bourbon seed. It is "very unequal as to length, and there is great "intermixture of short: it is pretty clean, but the "colour not uniformly good."

34. The small bale of thomil cotton per Carmarthen, which was cleaned by the American machine, and of which the report made to you by the Warehouse-keeper (Consultations, 26th November 1817,) was, "that it appeared to have "been prepared for spinning by the use of the "Indian bow, or some more violent instrument, "and that the staple was of unusual shortness, "hence I (the Warehouse-keeper) am led to "apprehend, that the fibre must be in some de-"gree deteriorated," has been shewn to the dealers in London, whose report is, "fine, bright, "uniform colour; the staple is good, and does "not appear to have sustained injury by the ma-"chine. Although this cotton is remarkably "clean, being nearly free from leaf, a considerable "number of small seeds are found in every hand-

"ful

"ful throughout the bale; these have escaped the "expected operation of the machine." These bags of cotton have sold at twelve-pence to fourteen-pence per pound.

35. We cannot but express our extreme regret, that our endeavours to introduce into India an improved method of cleaning cotton, so as to render it more fit for the Europe market, have failed: the process of more perfectly cleaning Indian cotton is, however, a desideratum that must not be lost sight of.

36. We recommend that you send to Bengal one of the instruments for cleaning cotton called a *churka*, in order that the Board of Trade at Calcutta may see if they cannot make some improvement in the machine used for cleaning cotton in Bengal, which is merely two small round pieces of wood worked in opposite directions by means of a winch, and what mechanics call an "endless screw." It is worthy of trial whether fluted wooden cylinders, instead of plain, would not be an improvement, or whether small fluted cylinders of iron or other metal would not be still better.

The cleaning of cotton is so important a matter, that we are very unwilling to suppose that no improvement can be made therein except by the expensive process of hand-picking, which from an experiment made at Bengal is not likely to answer, on account of the great expense of it. The

 following

following are the principal inconveniences which result from the present imperfect mode of cleaning.

1st. The particles of the leaves, and the oil which is crushed from the seeds, discolour the cotton.

2d. The freight and the duties are charged upon the gross weight, whether foul or clean.

3d. Vermin tear such bales of cotton as contain seeds, in order to get at the seeds for food, whereby the bales are damaged and rendered less merchantable.

4th. The foul cotton requires a more expensive preparation for the mills.

37. We take the present opportunity of noticing the receipt of five bales of cotton per the private ship Albinia, raised from Bourbon seed under the inspection of Mr. Surgeon Gilder within the Kaira districts. Our present remarks will be confined only to the quality of this cotton; the consideration of extending the cultivation will be resumed in the Revenue Department, in answer to your Revenue Letter of 11th April 1818.

38. The character of this cotton is "fine, silky, "even staple of fair length, good bright colour, "remarkably clean, having a small portion of "broken leaf and crushed seed: the few yel- "low spots that appear are occasioned by oil "from the crushed seed. This is deemed the best "specimen that has been imported from Bombay "raised

"raised from Bourbon seed." This cotton has been sold for fifteen-pence per lb.

No. 43.

EXTRACT LETTER *from the Secretary to the Board of Trade at Madras to the Secretary to Government, dated Fort St. George, 17th May* 1819.

SIR:

I am directed by the President and Members of the Board of Trade to request that you will lay before the Right Honourable the Governor in Council the accompanying copy of a letter from the Commercial Resident in the Ceded Districts, enclosing a Memoir on Cotton Cultivation. This paper contains much interesting information, and, in the opinion of the Board, seems to convey in a tangible form many useful observations, drawn from personal experience and careful investigation and enquiry. As the cultivation of India cotton continues to be a subject of great interest with the Honourable Court of Directors, the Board beg leave to suggest that a copy of Mr. Randall's Memoir, which contains hints on the expediency of procuring cotton-seed from America, be transmitted to the Honourable Court, with the small samples of cotton received with it.

2. Experience of several years has now clearly

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2. Experience of several years has now clearly

 shewn,

shewn, that little or no improvement can be confidently looked for in the quality of the Ceded Districts' cotton. The inhabitants appear to be satisfied with the price they generally obtain for it in its ordinary state, and shew no great disposition to improve its worth by additional care and trouble. This indifference and indolence of habit operates still more prejudicially in regard to the Ceded Districts' cotton, from the natural character of the article which adheres unusually close both to pod and seed.

3. With the view, however, of ascertaining by practical experiment the effect that may be produced by a higher price, we propose instructing the Resident to cause a certain quantity to be carefully picked and cleaned, and to offer a sum as far as 26 pagodas (rupees 91) per candy, for any quantity that may be brought of equal quality with that so prepared.

4. The above-mentioned difficulties seem to point out the expediency of introducing another species of cotton, which is free from the natural defect of Ceded Districts' cotton, and at the same time as hardy and productive as the plant of the country. The Board see no immediate prospect of procuring any part of the cotton investment in a fit state for the British market from the Ceded Districts. The article itself has proved, however, a profitable remittance to China, and notwithstanding its comparative inferiority, seems to have

have obtained in that market proportionally a better price than the Tinnevelly cotton: in this point of view, therefore, it is still considered expedient to continue the Cuddapah factory.

5. The cotton of Tinnevelly has been highly approved in the English market, and there is every reason to expect a similar testimony in favour of the produce at Coimbatore, which in quality appears, from the specimens produced by Mr. Heath, to be at least equal to that of Tinnevelly. Still the Board feel satisfied, from general opinion, and from the information communicated on a late occasion by Mr. Hayes, of Tinnevelly, that Tinnevelly cotton is inferior to many other descriptions, and that from the climate of those districts (*Tinnevelly and Coimbatore*) being peculiarly favourable to the growth of the plant, the better kinds might be introduced with little difficulty and trouble. This circumstance has led the Board, on the present occasion, to consider the expediency of endeavouring, on a limited scale, to introduce a system of cultivation which may eventually lead to the diffusion of a better species of plant. With this view, the Board would propose the establishment of four experimental farms under the direction of the local Commercial Residents, and upon the responsibility of the Commercial Department, namely, one in Tinnevelly, one in Coimbatore, one in Masulipatam, and one in Vizagapatam; each

each farm to consist of about four hundred acres *of good cotton soil, in that part of the district* where a proper supply of water may be most easily procured, the rent and expense of cultivation being paid by the Commercial Resident. After the selection of the farms, the Board would propose that the Commercial Residents should lose no time in making their arrangements for preparing the ground at the proper time for planting the seed in the ensuing season, by which time the Board would endeavour from different quarters to obtain the best description of seeds. The Board are aware, that it never could answer the purpose of the Honourable Company to become the growers of their cotton investment; it is to be understood, therefore, that the plan here proposed is experimental only, having for its object, the discovery how far the most approved cottons of other countries will thrive in these provinces, and the means of ascertaining, under careful European management, the result of cultivating new and approved kinds of cotton in those districts, which, as far as enquiry has gone, are considered the most productive, and of comparing the same with the indigenous product of each district. The experiment would also ensure the supply of a fresh and good stock of seed, of the description that may be found best to answer for distribution generally in those districts, and it would be a ground-work for introducing the same system of cultivation

cultivation in other districts, with the hope of ultimately superseding for the purposes of exportation the growth of the present country plant.

6. In case the Government should feel disposed to encourage the project suggested in the above outline, the Board would take the liberty of recommending that the local Collectors should be instructed to facilitate the enquiries of the Commercial Residents in regard to the spots most convenient and favourable for the experiments, and to assist them in all other matters immediately connected with the undertaking.

No. 44.

LETTER *from the Commercial Resident in the Ceded Districts to the Board of Trade at Madras.*

To the President and Members of the Board of Trade.

Fort St. George, 29th March 1819.

GENTLEMEN:

Par. 1. I have the honour to lay before your Board a Memoir upon Cotton Cultivation, accompanied by musters of cotton raised in the zillah of Cuddapah from Brazil and Bourbon seed, which perhaps may be worthy of your Board's particular attention.

2. Probably your Board may be pleased to send both

both the musters and the paper to the Honourable Court of Directors, as the cotton trade is undoubtedly of great importance to the English manufacturers, and may be made a profitable concern to the East-India Company.

3. I have no doubt, if such kind of cotton as the present musters can be procured in quantity, that it would rival in the English markets all the middling cottons of Brazil, Demerara, and America, and probably would only be excelled by the finest Sea Island cotton and New Orleans from the United States, which generally command very high prices.

4. If the Honourable Company's superfine cotton, with every possible charge, should cost landed in London not more than fourteen-pence a pound, and the second sort of good clean cotton not above eight-pence per pound, I may be allowed to say that it will turn out a trade advantageous to both the Honourable Company and the home British manufacturing interests.

Mr. Randall's Memoir upon Cotton Cultivation.

Having personally observed and well considered the present state of the native cultivators of the territories under Madras, it may be pronounced as an undoubted fact, that no scheme of cultivating any produce fit for the European or China markets will ever succeed, unless aided by the Honourable Government, or at least be patronized by the local

local Revenue Authorities. There can be no doubt that both excellent cotton, tobacco, saltpetre, pepper, sugar, indigo, and opium, with other articles, might be introduced and procured in great quantities, of good quality and at moderate prices, under Government control and attention, and certainly, in such a state as must be well adapted for exportation to Europe and China, producing wealth to the cultivators, revenue to the state, and a valuable export on Government account. This paper, however, is intended merely to shew what may be effected in cotton, if spirit and energy be displayed by the controlling powers. The cotton at present cultivated in the territories under Madras is not, generally speaking, of the best kind: much of the old native cotton is poor in produce and bad in staple. The most saleable cotton-seed for India would be from New Orleans, Brazil, and Bourbon, being the most profitable kinds of cotton, white in colour, long stapled, and producing the most wool from the pods, also the easiest cleaned from seed, and the least troublesome in cultivation. These seeds, however, require after planting the nourishment of water during the hot months, and should be watered twice every week. Even the Surat and Ahmood cotton-seeds, for a change, would be better than what at present are used, which seem exhausted or worn out. In agriculture, it is well known that a change of seed is very beneficial in increasing both quantity and quality.

quality. The musters of cotton and seed now sent with this paper are the produce of Brazil, or what is called kidney cotton, and Bourbon, marked A and B. Bourbon seed may be planted between small ridges of soil in open field, if the fields can be watered by wells, tanks, springs, or nullahs branching from large streams. The Brazil or kidney cotton is a tree which grows from ten to twelve feet in height, and which produces an immense number of pods, having the finest wool enveloped about conglomerated seeds, each pod having from six to ten seeds so conglomerated. This kind of cotton will succeed and thrive well on the banks of tanks, nullahs near springs, wells, and small streams of water: it is a very valuable kind of cotton. When the seeds are to be planted they are of course to be separated, so that each pod will produce six or ten-fold only in plants. The packets marked A and B contain pods taken from Brazil and Bourbon trees and shrubs planted by myself; packet A contains Brazil cotton as it comes from the trees. These pods will shew how formed by nature and how separated by art. If the Board of Trade could obtain from the Honourable Company's Agent residing at Rio de Janeiro in the Brazils about 500 or 1,000 bags of Brazil seed, each bag containing about 100 pounds-weight, and also by the same means some bags of New Orleans cotton-seed, also not forgetting a few bags of American Sea-Island cotton-seed, it should upon being

being received be instantly sent to, and be distributed to Collectors of Dharwar, Canara, Malabar, Seringapatam, Tinnevelly, Coimbatore, Trichi*nopoly, Tanjore, Barrahmahl, Arcot, Rajahmundry*, Vizagapatam, Ganjam, and a little to Cannool, and the most positive orders should be given to the said Collectors to order the seed without delay to be sent to the different Amildars, with instructions to give it to the head cultivators, or any respectable native having lands for cultivation, and to advise them to plant the same in and about the villages, near tanks, wells, nullahs, springs, in short wherever there is a command of water, that it may be duly nourished. At the same time an order should be issued by public *tomtom*, saying that fifty star-pagodas will be paid at the Amildar's cutcheree, upon the first delivery of 500 lbs. of clean white cotton, free from leaf, seed, and dirt, or two and a-half star pagodas for each maund, weighing 25 lbs. of clean white cotton, free from leaf, seed, and dirt; and further, as a reward to cultivators, Government will present to the first candidate who shall succeed in raising 500 lbs. of clean white cotton from Brazil seed, and who shall deliver the same at the talook cutcheree of the Amildar within two years from the time of planting, a gold medal with chain, to wear round the neck. This medal and chain shall be in value fifty pagodas, and shall be presented by the Collector in open cutcheree on some festival day.

day. Each zillah in which Brazil cotton is introduced shall be entitled to one medal and chain on the same terms; and if a number of competitors present themselves for such distinction, in that case they shall draw lots for the medal and chain, and those who do not win shall have some trifling reward, such as turbans, or handsome chintz for jackets. If this plan be only tried, I am of opinion that, in a few years, the Madras territories will produce a very large quantity of such fine cotton as will sell for twenty-pence a pound in England, which is about 104 pagodas a candy of 500 lbs., a sum sufficient to yield the Honourable Company a very handsome profit after paying all charges: besides, when once well established, something less than fifty pagodas a candy will be accepted by the ryots for this kind of cotton. The reason for not including Cuddapah and Bellary as good districts for introducing Brazil cotton-seed is, that during the hot months water is scarce, though there are a few places where a contracted trial might be made. But the new territories in the Doab, especially about the Kistna, the Malpurba, Gutpurba, Wurda, and branching streams of the rivers, are places admirably adapted for a grand experiment; and if ever any great improvement takes place in Madras cotton cultivation, and in plucking the pods free from impurities, it will be by introducing the new and better species of cotton-seeds, as well as by improving

improving the best kinds of Doab produce. A new country, unfettered by zillah regulations, is excellently adapted for such a trial, in preference, perhaps, to any other; yet other districts should not be neglected. The Board of Trade will perceive, by examining the accompanying packets marked A and B,* what a very great difference there is between the pods of Brazil and Bourbon cotton. The pods of Brazil cotton musters are large; the cotton separates easily from the seeds; the wool is very close enveloped round the seeds, thereby preventing pieces of leaf and dirt obtaining an easy entry. The Brazil cotton-tree is hardy, and after being exhausted will make good fire-wood. It lasts about seven years from the time of planting, and, when well up, is not easily injured by weeds; but it requires watering certainly twice in a week during very hot weather; in the rainy season it requires little or no attendance: it should at times be pruned of dead wood. I conceive from 500 to 600 plants will rise well upon an acre, and when full grown will produce each tree not fewer than five or six hundred good pods. I have myself counted even a thousand pods upon a large tree; but in all calculations it is best to be extremely moderate, as least likely to deceive; I have, therefore, calculated only five hundred plants upon an acre, each full-grown plant to yield five hundred pods. Two hundred and thirty pods, in general, will make a pound weight;

weight; and when the wool is separated from
the seed, the produce of fine clean cotton is from
9. one-quarter to one-third of the weight of every
pound gross cotton and seed. The muster now sent containing pods of Brazil cotton was actually planted and reared by myself. When I weighed thirty-six pods of this Brazil produce, the gross weight was 887 grains. After separating the wool from the seed, the wool weighed 234 grains, the seed 653 grains, not a particle of leaf or dirt in it. Thirty-six pods of Bourbon weighed gross 294 grains. After separating the wool from the seed, the wool weighed 80 grains, the seed 214 grains. Thus, it seems, Brazil cotton produces about twenty-five or twenty-six per cent. wool; Bourbon 27 per cent. Mr. Metcalfe found that old native cotton produced only twenty-two per cent. of wool; and he declared, justly, that it cleared or separated most tediously, and was quite a vexatious proceeding. But the most remarkable circumstance is, that old native produce is not more than 30 lbs. of clean cotton an acre. So small a produce has always surprised me, and caused a suspicion that my information was not correct; yet, after every enquiry, I have not been able to find a better result. The Brazil cotton is about, taking the lowest calculation, seed and wool 1,085 lbs. an acre, or 271¼ lbs. clean cotton free from seed; perhaps Bourbon may produce something more or less, depending upon how the shrubs come up, and

and thrive. To suppose that the natives of India, of themselves, will undertake any new scheme, is contrary to long and wide-spread experience. They are the children of very inveterate customs and prejudices, and nothing can induce them to alter their modes of proceeding, but the salutary interference of wise regulations aided by Government, and introduced skilfully and by well-directed measures. The natives conceive that Government can do every thing; and such being their ideas, though in some instances it may be erroneous, yet, as thinking so, they the more readily obey orders, provided such orders do not militate with their religious opinions, or violate any very particular customs generally observed. As to reasoning with the natives about the benefits of any new system or scheme, except in a very few instances, it is a vain attempt and a mere waste of time. They will coolly listen to such conversations, and then they will start the most absurd objections, give innumerable excuses, talk about their old customs, express dislike to innovation, laugh at the idea of increasing what is called by Europeans their comforts, and at last go away determined not to try any thing new. This is undoubtedly true when the natives are left to their own will and pleasure: let Government, however, only order a thing to be done, they will cheerfully obey; and when once well initiated in its advantage, their minds become changed, and they will then

then go on of themselves. If the weavers and spinners of England were allowed to do as appeared most pleasing to themselves, the manufactures of England never would have risen to such perfection as at present. In all the commercial towns and cities of England, very strong and severe laws exist to maintain staple articles, good spinning, and goods of a proper standard, agreeable to known regulations; and personal chastisement, imprisonment, and fine, are inflicted upon wilful offenders who violate the laws enacted for the prosperity of manufacturers and trade. Premiums, patents, and every kind of encouragement are also held out, and very often granted by both Government, corporations, and public-spirited individuals, to meritorious persons planning and bringing to perfection new schemes of cultivation, manufactures, and commerce.

Cuddapah, 29th March 1819.

No. 45.

LETTER *from the Secretary to Government at Madras to the President and Members of the Boards of Trade and Revenue, dated the 8th June* 1819.

GENTLEMEN:

Par. 1. I am directed to acknowledge the receipt of your Secretary's letter of the 17th ultimo.

2. Mr.

2. Mr. Randall's Memoir on the growth of cotton, and the samples which accompanied it, will be forwarded to the Court of Directors, in order that the Honourable Court may consider of the expediency of procuring cotton-seed of a better species from America, to supplant the inferior kind of cotton at present grown in India. The same project was strongly recommended by Mr. Bernard Metcalfe, from whom the Honourable Court may probably have the means of obtaining useful information regarding it.

3. The Governor in Council thinks it very desirable, as proposed by you, that an enhanced price should be offered in the Ceded Districts for clean picked cotton of a better description than what is usually produced there.

4. The several Collectors will be instructed, through the Board of Revenue, to afford all the assistance in their power to the Commercial officers in Tinnevelly, Coimbatore, Masulipatam, and Vizagapatam, in establishing and managing the proposed experimental cotton-farms, with the view of introducing the culture of an improved species of cotton. The object in view is of much importance, and worthy the attention of Government; and its attainment, probably, will admit of being secured, or its impracticability be ascertained, without subjecting the Company to any heavy expense.

Fort St. George, 8th June 1819.

No. 46.

EXTRACT *Madras Board of Trade General Report, dated* 30*th September* 1819.

Par. 33. We stated that the desirable object of restoring the cotton trade in the Northern Circars had not been lost sight of; but the numerous impediments that existed to the revival of a trade that had completely ceased, from a variety of causes, would necessarily render its restoration to any beneficial extent a work of some time.

34. That circumstance, however, would make the loss of one of the cotton-screws sent from England on the ship *Paragon* productive of the less inconvenience. The other screw, intended to be erected at Ingeram, had formed the subject of past correspondence with the Bengal Government; and measures were in progress to get the screw to that place, and ready for being put up, whensoever ciroumstances shall so change as to hold out a prospect of any collection of cotton to a sufficient extent.

35. With a view to assist in the desirable measure of extending the cultivation of the Bourbon and other valuable cottons, and the ascertaining the congeniality of the soils of various districts to the growth thereof, we had, under the sanction of Government, commenced the introduction of cotton farms of about four hundred acres each. These

These experimental depôts were not sufficiently advanced to enable us to enter here into any observations respecting them. Tinnevelly and Bourbon seed was distributing by every opportunity, and we trusted that a very large quantity of valuable seed would be produced in those experimental nurseries, which would be available for such parts of the Peninsula as experience shall prove were best adapted to the object which was in view.

36. We had much satisfaction in noticing the progress that was making in respect to the realization of a cotton investment in Coimbatore. A large quantity was expected to arrive before the setting in of the rainy season, but it was apprehended not sufficiently early to enable us to transmit a muster bale to the Honourable Court on the chartered ship *Catherine*. A very recent letter from Coimbatore holds out a confident expectation of an investment of between 1,500 and 2,000 candies of cleaned cotton being available in that district in the ensuing season; and it was our intention to urge the provision of the article in that district to the fullest practicable extent. By the conclusion of January, a large quantity of cotton would be on hand, ready for exportation; and when the extent of it shall have been ascertained on sufficiently accurate data, we stated that we would have had the honour to request that application be made to Bengal, to know if there was

vacant tonnage available on any of the Honourable Company's ships.

No. 47.

EXTRACT LETTER *from the Court of Directors to the Governor in Council at Bombay, dated the* 22*d December* 1819.

Par. 5. The samples of cotton noticed in your letter of the 14th August 1818, were found to be of excellent colour and perfectly clean, but short in the staple and coarse, and had been hurt by some process in cleaning: there was but little difference in their quality.

6. The consignment of 289 bales of Broach thomil, per *Lady Lushington*, noticed in your letter of the 19th October 1818, proved to be very fine cotton, both in colour and staple, and it had been properly cleaned.

7. The Jambooseer thomil, by the same ship, was ill gathered and not clean enough.

8. The sample of cotton of Malwan growth from Bourbon seed, was reported to be of fine, long, silky staple, but badly managed, being stained in a remarkable manner, probably with oil from the seeds.

9. The sample of Broach growth from Bourbon seed was of short staple, not of good colour, and foul with particles of leaves.

No.

No. 48.

EXTRACT LETTER *from the Court of Directors to the Governor in Council, Madras, dated the 25th January* 1820.

The two samples of Coimbatore cotton-wool described in the letter from your Chief Secretary, of the 23d January 1819, and transmitted to us on the *Warren Hastings*, have been examined by competent judges.

The sample No. 1, on which extra cleaning had been bestowed, is declared by them to be very good cotton in colour and staple, perfectly clean, and not injured by the operation of cleaning. The sample No. 2, which had been cleaned in the usual manner, is of the same quality and reasonably clean. The colour of No. 1 is much better than that of No. 2, owing to the extraordinary cleanness. Cotton, like No. 1, would probably produce at our sales one penny per lb. more than No. 2. Considering the loss of weight and the expense that would be incurred here in rendering No. 2 equal to No. 1, the real difference in value may, perhaps, not be less than two-pence per pound. Cotton remarkably clean will not, however, produce its true relative value, until the manufacturers shall be accustomed to receive it in that state, without distrust as to the soundness of the staple.

The

The samples of cotton-wool transmitted to us, per the *General Hewitt*, have likewise been received, and the following is the result of a careful examination of them:

The cotton in one of the parcels from Ganjam, weighing 128 lbs., but not distinguished by a number in the invoice, is of a good colour and fairly cleaned, but coarse and short in the staple; shorter than good Bengal cotton. The sample in the other parcel from Ganjam, weighing 90 lbs., is very poor and weak, pretty clean, but as short in the staple as the sample in the parcel weighing 128 lbs.

The sample from Nagpore is nearly of the same quality as the cotton in the parcel of 128 lbs. weight from Ganjam, but somewhat cleaner.

The sample from Ingeram proves of bad quality, being very short and coarse in staple, stained and otherwise foul, with leaf and seed.

The sample from Maddepollam is of nearly the same quality and value as the sample from Ingeram.

All the above samples from Ganjam, Nagpore, Ingeram, and Maddepollam, exhibit qualities and defects that will render the cotton unfit for advantageous importation into this country.

No. 49.

EXTRACT LETTER *from the Court of Directors to the Governor in Council at Bombay, dated the 13th February* 1822.

Par. 14. This letter is confined to the subject of the experiments which you have been making in the cultivation of the Bourbon cotton. You have obtained statements, both from Mr. Gilder in Kaira and from Mr. Hale in Malwan, that the results of the cultivation which they had respectively attempted on a small scale in the preceding season had been successful. There is also considerable evidence afforded, that no want will be experienced of a suitable soil and climate for raising this commodity to a large extent. The excellence of the quality seems to be established.

15. In these circumstances, it is highly desirable that the experiment should be prosecuted. It is quite proper to ascertain to what degree the means of cultivating it in the provinces of which you have charge do really exist, and to proceed so far in exhibiting the cultivation, as to make the people who should engage in it fully acquainted with the whole of the process, and also with the benefits to be derived from it. But when the people are fully acquainted with the mode of producing this, or any other particular commodity, and with all the advantages to be derived from it, they should be left

to

to balance these with the advantages of the several other commodities which they have it in their power to produce, and to chuse for themselves.

16. With these views, we approve the authority which you have granted to the Collector in the Eastern Zillah, to prosecute to a certain extent, for another season or two, the cultivation of the Bourbon cotton at the expense of Government, and to grant premiums to the individuals whose cultivation has been the most successful.

17. Your proposal for obtaining a supply of the Pernambuco cotton-seed is not unworthy of attention; but the experiment, we think, should be made on a very limited scale and be undertaken solely by you, lest it should interfere with the cultivation of the Bourbon cotton. If it is found that the population take to this culture, and that the soil and climate are favourable, in that case every thing should be done which is calculated to improve it to the utmost. If these hopes should not be realized, every effort, beyond what is necessary for giving a fair trial to the experiment, would be labour thrown away.

No. 50.

EXTRACT LETTER *from the Court of Directors to the Governor-general in Council, Bengal, dated the 8th October* 1823.

Letter from the Board of Trade, 12th November 1822, enclosing a minute of Mr. Udny, of the 11th of the same month, regarding samples of Barbadoes and Brazil cotton grown on the farm of the Marchioness of Hastings, at Futteghur, sent home per *General Hewitt*, and also musters of the same cotton sent to Hurripaul and Santipore for manufacture.

Par. 26. The musters of the cotton herein referred to, which are the growth of the farm of Lady Hastings at Futteghur from Barbadoes seed, have been duly received, *viz.* one bale per *General Hewitt*, marked "Barbadoes cotton," containing two parcels of cotton-wool, without any distinctive marks, weighing about 37 lbs. each parcel.

27. The said musters having been submitted for inspection to several intelligent brokers, we are now enabled to acquaint you as to the quality and value of the same. There appears to be scarcely any difference in the quality of the two musters. Part of the cotton has a very fine and long staple, but there is also a considerable proportion of short and weak fibre: the best flakes are very silky, and possess much brightness of colour. It is thought, however, there has been some error in the method of gathering and cleaning the cotton,

cotton, as great part of it is stained and has a general hue of dinginess. This imperfection would seriously reduce the value of any cotton, of however favourable growth, when imported as merchandize: and it is also observed, that the cotton has not been sufficiently cleaned from the seeds; but this point may not have been considered essential, the cotton being merely forwarded as musters. It is necessary, however, here to notice the primary importance of cotton being as free from impurities as possible, the state of cleanness of the article affecting in a great degree the sale-price of the same.

28. Under good management in gathering and cleaning, it is considered that this kind of cotton would prove useful in the London market. In its present imperfect condition it is valued by competent judges at 8*d.* to 8½*d.* per lb.

29. We shall be gratified to learn that this superior description of cotton can be produced with advantage to the cultivators, and we shall await the report of the parcels of this cotton, and also of the cotton raised from Brazil seed, which have been forwarded for manufacture at Hurripaul and Santipore.

30. For the purpose of comparison, we here subjoin the current prices of cotton in the market at this present time (September), *viz.*

Very good Surat .... at 8*d.* per lb.
Very good Madras .... 7½*d.*

Good

Good Bengal .... $6\frac{1}{2}d.$ per lb.
Lady Hastings' cotton,..... $8d.$ to $8\frac{1}{2}d.$

31. We learn from the Memorandum of Mr. Udny, *dated* 11th *November* 1822, that the plant from which the Barbadoes cotton has been produced is perennial; whether the Brazil cotton, of which no sample was sent to England, is also perennial, does not appear. We request to be informed on this point.

No. 51.

EXTRACT LETTER *from the Court of Directors to the Governor in Council at Bombay, dated the 7th January* 1824.

Par. 14. On receipt of the specimens of cotton raised from Bourbon seed in the Kaira districts and in the Southern Concan, of the shipment of which on the *Hannah* we were advised in a letter from Mr. Farish, your Secretary in the Territorial Department, of the 31st May 1823, we ordered them to be submitted to the examination of intelligent brokers. For the result of the examination and the opinion of the brokers as to the quality and comparative value of the cotton in the London market, we refer you to a report of our Warehouse-keeper, a copy of which is transmitted in a number in the packet, from the perusal of which you will learn that this cotton, although tolerably good,

good, possesses little of the natural properties of its parent stock, and that its appearance here does not accord with the favourable report made upon it by a Committee of Native Merchants at Bombay. We should be glad, however, to receive a further specimen and in larger quantity.

No. 52.

EXTRACT LETTER *from the Governor-general and Council in Bengal to the Court of Directors, dated the* 31*st March* 1824.

Par. 15. With regard to the information required by your Honourable Court in the thirty-first paragraph of your present despatch, it appears from a communication made to the Board of Trade on the subject by the Superintendent of the Botanic Garden at this presidency, that the Brazil cotton referred to has proved *triennial*, both at Futteghur and at the Botanic Garden. Dr. Wallich, however, applies this term to its productiveness, as he states that the shrub itself will continue alive for five or six years or longer, but that after the third year it declines rapidly and yields a very small crop.

No. 53.

EXTRACT LETTER *from the Governor-general and Council in Bengal to the Court of Directors, dated the 3d August* 1826.

Par. 29. The papers referred to in the margin relate to an experiment made by Mr. Assistant-Surgeon Henderson of this establishment, in the cultivation of Bourbon and some species of American cotton, in the Upper Provinces. The object of the experiment in question, as stated by Mr. Henderson, is to obtain cotton at a comparatively low price, capable of being manufactured by British machinery into cloths equal in quality to those manufactured from the cotton of America, and not to improve the quality of the cotton for the purpose of internal consumption. Small samples of the cotton raised by Mr. Henderson have been received, a report on which by the Sub-Export Warehouse-keeper will be found among the documents relating to the subject above referred to. Larger supplies have been promised, which when they reach the presidency will be disposed of in accordance with the wishes of Mr. Henderson, who is desirous that the specimens should be submitted for examination and opinion to competent persons in England. The adoption of this course would seem to be desirable, in order that your Honourable Court may be enabled to form a judgment

ment, as to the expediency or otherwise of prosecuting the experiment on account of the Honourable Company

COTTON-WOOL.

(SECOND SERIES.)

No. 54.

LETTER *from the Secretary to the Committee of Privy Council for Trade to the Secretary to the Commissioners for the Affairs of India, dated Whitehall,* 26*th July* 1828.

SIR:

The attention of this Committee has lately been called to the possibility of improving the culture in the East-Indies of some articles which are now chiefly supplied by the United States of America, particularly in cotton and tobacco.

It has been represented to their Lordships, that the cotton of India is inferior to that of Carolina; not through any inferiority in the soil in which it is grown, but through a defective mode of cultivation; and it is thought that this deficiency might be supplied by a judicious application of skill and capital.

The same representation is made as to tobacco.

A slight encouragement is about to be extended to the cotton of India, by the reduction of the import duty upon cotton-wool from six per cent. on the value to four-pence per cwt.; but if the Lords of the Committee are rightly informed, this encouragement will not be sufficient to occasion the necessary improvement of the cotton, unless measures be taken in India for applying skill and capital to the cultivation.

The

The peculiar system of administration which the Legislature has sanctioned for British India forbidding Europeans to settle in the country, prevents the operation of the encouragement ordinarily afforded by an extensive market and a favourable tariff.

But my Lords conceive that it may be quite consistent with the maintenance of that system, to extend facilities, liberal in their character but limited in their extent, to British subjects who may be disposed to settle in the cotton districts, and whose character, property, and knowledge, qualify them for the object required.

Their Lordships apprehend that the important article of indigo has flourished under encouragement of this nature.

Under these impressions, the Lords of this Committee direct me to request, that you will move the Commissioners for the Affairs of India, to take these suggestions, as they regard both cotton and tobacco, into their consideration, and to communicate thereupon with the East-India Company.

The Court of Directors cannot fail to admit the importance of the object; and it is hoped that, if they should not consider the suggestions of this Committee as pointing out the most advisable method, they will suggest some other method of obtaining it.

I am to add, that their Lordships are desirous of

of receiving the fullest information which the Commissioners may be able to afford them of the present state of the culture and trade of cotton and tobacco in the East-Indies.

I am, Sir, your most obedient humble servant,

(Signed) THOMAS LACK.

George Bankes, Esq. &c. &c. &c.

No. 55.

LETTER *from the Secretary to the India Board to the Secretary to the Court of Directors of the East-India Company, dated* 2*d August* 1828.

SIR:

I am directed by the Commissioners for the Affairs of India to request that you will lay before the Court of Directors of the East-India Company the accompanying copy of a letter which has been addressed to the Board by the direction of the Committee of Privy Council for Trade.

The Board are desirous of being furnished with the sentiments of the Court relative to their Lordships' suggestion as to the improvement of the cotton and tobacco of India, and also of receiving, at the earliest possible period, the information requested as to the present state of the culture of those articles.

I am, Sir,

Your most obedient and humble servant,

(Signed) GEORGE BANKES.

Joseph Dart, Esq.

No. 56.

LETTER *from the Secretary to the India Board to the Secretary to the Board of Trade, dated the 22d September* 1828.

SIR:

The Commissioners for the Affairs of India, in compliance with the request of the Lords of Privy Council for Trade, as intimated by your letter of the 26th July last, have directed their attention to the suggestions of the Lords of Privy Council for Trade, regarding the possibility of improving the culture in the East-Indies of cotton and tobacco.

In pursuance of directions from the Commissioners for the Affairs of India, a copy of your letter of the 26th of July was by me transmitted to the Court of Directors, accompanied by a request that every information which it might be in the power of the Court of Directors to communicate on the subject therein referred to, should be furnished at the earliest possible period.

I am now directed by the Commissioners for the Affairs of India to transmit to you, for the purpose of being laid before the Committee of Privy Council for Trade, the copy of a letter from Mr. Dart, dated the 5th instant, being in reply to that which I had the honour to address to him when enclosing

enclosing a copy of your letter on the occasion above referred to.

I am, Sir,
Your most obedient humble servant,
(Signed) GEORGE BANKES.

Thomas Lack, Esq.
&c. &c. &c.

No. 57.

LETTER *from the Secretary to the Court of Directors to the Secretary to the India Board, dated the 5th September* 1828.

SIR:

I have had the honour of receiving and laying before the Court of Directors your letter of the 2d ultimo, enclosing a copy of a letter which had been addressed to the Commissioners for the Affairs of India by the direction of the Committee of Privy Council for Trade, respecting a department of the agriculture and commerce of India, to which the Court of Directors attach equal importance with His Majesty's Commissioners and the Lords of the Committee of Privy Council.

I am directed, in reply, to communicate to you the following observations.

There appear to be two points on which information is desired: first, the sentiments of the Court relative to the expediency of extending facilities

to

to British subjects who may be disposed to engage in the cultivation and improvement of the cotton and tobacco of India, it being conceived that the important article of indigo has flourished under encouragement of this nature; and secondly, the present state of the culture and trade of cotton and tobacco in India.

1. With respect to the first point I am directed to state, that the same encouragement on the part of the Indian Government is now afforded to the cultivation and trade of the articles in question as to that of indigo, alluded to by the Lords of the Committee of Privy Council for Trade. Land is granted to speculators in these articles on the same terms as those in indigo, and a drawback of all duties is allowed on export to the United Kingdom.

2. With respect to the second point, namely, the present state of the culture and trade in the two articles in question, I am directed to communicate to you the following particulars, *viz.*

Memorandum on the present State of the Culture and Trade of Cotton in the East-Indies.

The cotton shrub is indigenous throughout the peninsula of India, from Ceylon in the south to the foot of the Himalaya mountains in the north, and various kinds have long been known to the native cultivators, *viz.* annual, biennial, and cotton of several years' duration. Some kinds scarcely reach the height of one foot, others attain ten or twelve

twelve feet, and some a still greater height. The species which is most generally, indeed it may be said universally, in cultivation in India, is an annual shrub, a variety of the green-seed kind, yielding a white pod; but even of this variety there are many sub-varieties, of some of which the wool is more easily separated from the seeds than of others. There are, likewise, cotton-plants with brown, yellow, ash-coloured, and iron-grey pods. Some of the species have black seeds, some green seeds, and there is cotton found with red seeds.

The introduction into India of new and better species, and of improved modes of preparing cotton for the European markets, has at various times during the last thirty years engaged the attention of the Court of Directors and of the Indian Governments, and also of the private residents, and the following kinds of foreign cotton, and probably others, have become objects of experimental cultivation in various parts of India, *viz.*

Sea Island cotton,
Barbadoes cotton,
Brazil cotton,
Bourbon cotton, both of the green-seed kind and the black-seed varieties.
Cotton from China.

It would be matter of gratification, if it could be said that success had attended these endeavours: but the native cultivators do not appear to have

have given any, or at most very little attention to the subject; and all the experiments on a scale of commercial speculation which have been conducted by Europeans have been confined to the Bourbon species, to which the Court of Directors, in consequence of representations of its superior quality and usefulness, gave particular encouragement, by importing into India a large supply of seed during several years; but the cultivation has been checked by an unlooked-for difficulty, *viz.* that the consumption of cotton having a long silky staple is very limited, and that the demand of the British or foreign manufacture does not require, and consequently purchasers cannot be found for, a large supply of Bourbon cotton.

The latest experiment for the introduction of foreign cotton known to the Court, is that of the Marchioness of Hastings, who having procured from England, in the year 1823, a new supply of seeds of the Brazil and Barbadoes cottons, cultivated the same under her own inspection at her ladyship's farm near Barrackpore, and distributed the seeds amongst the husbandmen in the neighbourhood. Part of the cotton thus raised from the Brazil and Barbadoes seeds was delivered to the Commercial Residents at the Company's factories of Santipoor and Hurripaul, for the purpose of being wrought up into muslins, some pieces of which are now in the Company's warehouse in London

London; but whether the natives have continued to cultivate the species of cotton thus placed within their immediate reach, does not appear.

The delicate fabrics of Dacca were at all times manufactured entirely from the cotton of that district, which is the finest of all the cotton produced in India, and is probably the finest in the world; but the growth of this particular kind of Dacca cotton is limited to a space of about forty miles in length by less than three in breadth, along the banks of the Megna, about twenty miles north of the sea. An attempt was made in the years 1790 and 1791 to encourage the cultivation of this species of Dacca cotton in the other parts of Bengal, and the Collectors of the Revenue, with the Residents at the commercial factories, were directed to distribute the seeds amongst the native cultivators; but the endeavour failed of success.

The Court of Directors are in possession of various reports from the Company's Revenue and Commercial servants and others, upon the culture and management of cotton in several parts of India, in which the times of sowing, gathering, and other particulars, are set forth with great attention to details, shewing also the tenures of land. The information contained in these documents might be useful if digested into an abstract, but it would require much time for the performance of such an abstract.

Bengal,

Bengal, it is well known, does not produce, and probably never did produce, a greater supply of cotton than is required for its internal consumption; and during the periods when the Company's investment of cotton manufactures for exportation to London was in its once large and flourishing state, and at the same time there was an active demand for the like goods by the French, Dutch, and Danish merchants, the quantity of cotton grown in the Bengal provinces did not equal one-eighth part of the quantity worked up there into piece-goods. The necessary supply was imported from the Deccan, the Doab, and various parts of the Mahratta country; and it appears that the value of the quantities of cotton which passed the then frontier custom-house of Manjee, at the confluence of the river Gogra with the Ganges, amounted in one particular year to a crore of rupees. But a great portion of this foreign cotton was exported from Calcutta by sea.

The treaty of the Nabob Vizier of the year 1801, and treaties with other Native Princes, have however transferred to the Company the sovereignty over some of the Central provinces of India, which afford cotton in great abundance, and the supplies of cotton which arrive at Calcutta are now classed as British produce, very little cotton produced in countries beyond the British frontier being now imported into the Company's provinces.

vinces.* The quality of the cotton, however, remains as hitherto; and as, from its shortness of fibre, it is not considered suitable to the purposes of

* *Value of Cotton imported into Calcutta by land.*

	Sicca Rupees.
1820-21.	
From Company's territories	47,88,986
From beyond frontier..................	23,367
Total imported....	48,12,353
1821-22.	
From Company's territories	44,72,161
From beyond frontier..................	1,72,337
Total imported....	46,44,498
1822-23.	
From Company's territories	26,32,485
From beyond frontier	2,44,038
Total imported....	28,76,523
1823-24.	
From Company's territories	17,62,904
From beyond frontier..................	3,40,461
Total imported....	21,03,365
1824-25.	
From Company's territories	42,71,368
From beyond frontier............... .	2,26,630
Total imported....	44,97,998
825-26.	
From Company's territories	23,79,224
From beyond frontier..................	5,07,968
Total imported....	28,87,192

of the British manufacturer, it meets with little encouragement in Britain, and Indian cotton has, for some time past, been selling at a lower price in London than its original cost in Calcutta.

Besides the general defect of shortness of staple, Indian cotton is liable to objection on account of its not being sufficiently cleansed from the seeds, leaves, and other matters. To remedy which, the Court of Directors obtained from America patterns of the most approved machines in use in Georgia and Carolina, for separating the wool of the cotton from its seeds: and they also, in the year 1813, engaged the services of Mr. Bernard Metcalfe, a very respectable man, who had for some years carried on the business of a cleaner of cotton in Georgia; but this person, after residing in India some time, finding that his endeavours to induce the natives to use American machines were fruitless, gave up the employment and retired from India altogether.

The following is the value of the exports of cotton from Calcutta by sea for the years mentioned, *viz.*

An Account of the Value of Cotton exported by Sea from Calcutta.

Countries to which exported.	1820-21.	1821-22.	1822-23.	1823-24.	1824-25.	1825-26.
	Sa. Rs.	Sa. Rs.	Sa. Rs.	Sa. Rs.	Sa. Rs.	Sa. Rs.
United Kingdom	7,16,157	3,54,962	2,88,486	4,51,021	5,01,779	4,76,169
France..........................	—	1,460	12,782	—	77,352	—
Sweden	—	—	—	—	—	2,196
Sumatra	2,435	12,334	12,583	—	—	1,271
Java	782	3,976	13,137	6,362	—	—
Coromandel	—	4,566	—	—	—	—
Penang	—	8,371	—	—	25,215	—
China...........................	37,21,507	30,38,642	9,17,992	18,90,185	26,23,989	25,77,494
Total .... Sa. Rs.	44,40,881	34,24,311	12,44,980	23,47,568	32,28,335	30,57,130
Total quantity in maunds	278,319	239,131	95,244	158,859	251,205	236,141

For

Fort Saint George.

The cotton trade of the Company's territories under the presidency of Fort St. George is next to be considered.

The Northern Circars, which extend about five hundred miles along the Coast of Coromandel from the river Kistna to the borders of Cuttack, have from very early times been the seat of an important and extensive manufacture of cotton piece-goods, of which the descriptions of calicoes known as Madras longcloths and salampores were the chief, and with Masulipatam dyed handkerchiefs and other kinds of goods for the African and West-India trade, have until lately been in great demand. Masulipatam goods have, however, for some years been entirely superseded by the manufactures of Manchester and Glasgow, and in all appearance the Northern Circars will, at no distant period of time, be deprived of the manufacture of white calicoes also.

The cotton which is grown in the Northern Circars is neither abundant in quantity nor good in quality. The weavers have depended for a considerable part of the supply of their raw material upon the Mahratta countries to the westward, from which cheaper and better cotton was brought by persons termed *Lombadies*, who travelled down to the coast at the proper season of the year in large bodies, and took back salt, betel, copper, and other merchandize, in return.

As

As all the cotton which was brought from Berar, the Deccan, and other countries of the interior, was conveyed by land, the Mahratta cotton was dearer at the sea-ports than the cotton which was carried to Calcutta by water, and it does not appear that cotton has, at any time, been an article of export by sea from the Northern Circars.

The districts to the southward and to the westward of Madras afford cotton of better staple than the Northern Circars, and the East-India Company have had considerable factories for the provision of longcloths and salampores in the territories to the southward of the Presidency; but the crops of these southern provinces being much subject to the casualty of uncertain seasons, the price of the cotton has been thereby enhanced, and the goods were dearer than those of the northern districts. The calicoes of the southern division of the Indian peninsula were early supplanted in the European market by British manufactures.

Endeavours to establish the cultivation of superior kinds of cotton in the southern division of the Madras territories have been long in the course of progress. Bourbon cotton and Brazil cotton have been cultivated by the Company's servants and by private residents, and it is understood the cultivation of Bourbon cotton, from seed originally imported by the Company, is still carried on to some extent by a private resident at Tinnevelly.

The

The person before noticed as sent by the Court to introduce the American method of cleaning cotton resided in these districts.

The districts of Canara and Malabar, on the western coast of India, constitute part of the Madras presidency, and there is some trade in cotton between the province of Canara and Bombay; but the cotton exported is not the produce of Canara but of the countries above the Ghauts.

The East-India Company continue, at present, to maintain factories in the southern division of the peninsula, where cotton is provided, chiefly for exportation to China in the Company's Europe ships which touch at Madras on their outward voyage from England; except which, the export trade of cotton from the presidency of Madras to foreign places is not considerable, as the following statement shews.

An Account of the Value of Cotton exported by Sea from the Territories under the Government of Fort St. George.

Places to which exported.	1824-25.	1825-26.	1826-27.
	Madras Rs.	Madras Rs.	Madras Rs.
To the United Kingdom	1,05,697	1,18,691	49,535
— France	33,600	18,348	—
— Bengal	62	—	1,462
— Bombay	1,10,921	4,74,155	1,14,258
— Ceylon	—	136	20
— Maldives	1,421	1,089	1,071
— Travancore	236	18,052	14,027
— Sumatra	4,240	—	4,000
— Malacca	175	180	540
— Arabia	—	958	—
— Mauritius	—	- -	2,080
— Halifax	—	60	—
— China	8,30,108	5,58,225	5,29,691
Total value, Madras Rs.	10,86,460	11,89,894	7,16,684
Total quantities .. cwt.	44,287	59,030	40,410

In respect of the trade in cotton at the island of Ceylon, if any such exist, information will no doubt be found at His Majesty's Colonial Department.

BOMBAY.

Bombay.

The soil of the Northern and North-eastern districts under the Government of Bombay, and especially of the province of Guzerat, is equal in richness and fertility to any in the world, and these countries produce cotton more abundantly than any other part of the British dominions in India, the provinces in the Doab, of the Jumna and Ganges excepted; but the quality of the Surat cotton, by which general name this produce is known, is, in common with all other Indian cotton, of a short staple, and therefore not suitable to the British manufacturers.

Many endeavours have been made by European residents, chiefly the servants of the Company, for the amelioration of the cotton grown in the Bombay territories. Land has been granted for that purpose, and every necessary assistance appears to have been afforded by Government; but the attempts at improvement have been confined to the introduction of Bourbon cotton only, and have not been attended with success. No quantity of improved cotton has been sent to England from this side of India; and if the preceding observations, as to the absence of demand for cotton of a long silky fibre, be well founded, it cannot be expedient to extend the cultivation of this particular kind in any part of India.

The Company's Botanic Garden at Calcutta is probably

probably capable of furnishing experimental cultivators with different varieties of the best cotton-plants, and considering the general opinion which is entertained of the peculiar fitness of the Bombay territories for the cultivation of cotton, it would seem to be highly desirable that other kinds than the Bourbon should be tried upon the western side of India.

The port of Bombay is the general emporium for all the cotton produced on the western side of India, and for much that is grown in the interior.

If the cotton exported by the Company from Bombay to China in the year 1825-6 be added to the general quantities exported, as shewn in the subjoined account, the total export of cotton from Bombay in that year (being the latest of which the accounts are received in London) would be found to have exceeded sixty millions of pounds, and the total of the exports of cotton from British India in the same year must have been little or nothing short of 100 millions of pounds-weight.

An Account shewing the Value of Cotton exported by Sea from the Presidency of Bombay, exclusive of Cotton exported by the East-India Company.

Places to which exported.	1820-21.	1821-22.	1822-23.	1823-24.	1824-25.	1825-26.
	Bombay Rs.	Bombay Rs.	Bombay Rs.	Bombay Rs.	Bombay Rs.	Bombay Rs.
United Kingdom	3,33,588	8,40,586	24,10,219	20,56,372	34,81,089	44,63,603
France	—	—	—	—	—	36,195
Bengal	—	—	17,000	1,15,939	36,660	—
Coromandel	—	100	7,125	—	—	—
Malabar and Canara	28,530	1,06,980	70,391	1,11,799	45,669	41,571
Goa and Concan	14,000	33,184	3,840	—	400	—
Cutch and Sind	58,321	9,000	15,900	150	34,235	740
Persian Gulf	26,565	18,365	12,150	18,097	7,400	15,205
Arabiah Gulf	2,80,677	3,45,485	2,02,941	1,09,488	1,49,827	93,610
Coast of Africa	1,225	5,800	15,191	12,950	8,280	12,805
Penang, &c.	57,150	1,53,800	29,250	84,740	1,37,940	30,875
Manilla	—	—	—	—	—	7,600
China	44,89,062	32,36,019	30,07,096	36,83,338	53,72,775	72,88,149
Total ... Bombay Rs.	52,89,118	47,49,319	57,91,103	61,92,873	92,74,275	1,19,90,353

The Quantities are not reported.

No

No. 58.

LETTER *from the Secretary to the India Board to the Secretary to the Board of Trade, dated the 16th October* 1828.

SIR:

In reference to your letter of the 26th July last, I have received the directions of the Commissioners for the Affairs of India to transmit to you, for the information of the Lords of the Committee for Trade, the enclosed copy of a letter which has been addressed by the President of this Board to the Chairman and Deputy Chairman of the East-India Company, on the subject of the culture of cotton and tobacco in the East-Indies.

I am, Sir,
Your most obedient humble servant
GEORGE BANKES.

Thomas Lack, Esq., &c. &c.

No. 59.

LETTER *from the President of the India Board to the Chairman and Deputy Chairman of the East-Company, dated the 7th October* 1828.

GENTLEMEN:

I have considered with much attention the letter of Mr. Dart to Mr. Bankes, dated the 5th ultimo, respecting the culture of cotton and tobacco in the East-Indies.

I know

I know you must be strongly impressed with a sense of the great importance of improving the cotton grown in the East-Indies, of extending thereby the export trade of the territories of the East-India Company, and of rendering this country independent of foreign nations for the supply of the raw material of our most considerable manufacture; and I am therefore satisfied that you will give your favourable consideration to the suggestions I am about to offer to you on this subject.

It appears, undoubtedly, that measures have been taken at different times by the East-India Company for introducing into India the culture of various sorts of foreign cotton; and it seems that, on one occasion, a gentleman conversant with the cleaning of cotton in Georgia was engaged by the East-India Company, for the purpose of giving instruction in the use of the American machines for separating the wool of the cotton from its seeds, but that the attempts hitherto made for the improvement of the culture and management of cotton have not been successful. It does not appear, however, that experiments have been made in many different parts of India, for the purpose of ascertaining whether, in some districts of that vast country in which the cotton-plant is indigenous, it may not be possible to raise some of the superior sorts of foreign cotton. Experiments made in the Botanical Garden of Calcutta, where cotton-plants from different soils and climates are cultivated

cultivated in the same soil and in the same climate, must necessarily be productive of no satisfactory result.

I must therefore suggest to you the expediency of attempting, on a small scale, the cultivation of all the finer sorts of foreign cotton in different and distant parts of India, under every different circumstance of soil and climate, and of transmitting to England, cleaned in the American manner, and with every precaution to protect them from the weather, samples of the cotton so raised, for the purpose of comparison with the cottons of other countries.

As it is understood that the value of cotton depends very much upon the care with which it is cleaned, and on its being protected from the weather, it is deserving of your consideration, whether it may not be advisable for the East-India Company to receive a portion of the land-tax in cotton at a fair valuation, and to manage on its own account the cleaning of the cotton so received; and its transport to the place of shipment. Should it be found practicable to raise in India any of the superior sorts of cotton, it would be for the interest of the East-India Company to encourage the culture of such cotton, by taking it at a higher valuation in the payment of the land-tax.

I cannot entertain a doubt of the disposition of the East-India Company to permit the residence in the interior of India of British merchants, who

may

may be willing to employ their knowledge and their capital in the culture of an article, of which the production, in any quantity, of a superior quality, would conduce in so great a degree to the interest, not only of the East-India Company, but of this country.

I trust that you will persevere in your endeavours to produce a species of tobacco suitable to the British market.

I have the honour to be, Gentlemen,
Your most obedient humble servant,
(Signed) ELLENBOROUGH.

The Chairman and Deputy Chairman
of the East-India Company.

No. 60.

LETTER *from the Court of Directors to the Governor in Council at Bombay, dated the* 18*th February* 1829.

Par. 1. During many years past, we have been strongly impressed with a sense of the great importance of improving the quality of the cotton grown in India, and have directed our attention to the introduction of new and better species of cotton, with the view of rendering the produce of British India fit for the general consumption of the manufactures of Great Britain, and it would have

have been matter of great satisfaction if our endeavours had been attended with success.

2. This failure has not been owing to want of co-operation on the part of our Governments, supplies of cotton-seed having been imported into India, and land granted to Europeans for experimental cultivation; but the experiments, upon a scale of commercial usefulness, have been confined to the Bourbon species; and the cultivation of this kind, which we understand is of the black-seed description, and yields a longer staple than any other kind of cotton, has been checked, by the unexpected difficulty of finding a market for the increasing supply of long and silky cotton. As to the former supply of this cotton, there has been added, since the year 1823, the growth of Egypt to a considerable extent, and of other places, which has produced an important change in the relative value of the green-seed and black-seed kinds; and at the present time, the stock of black-seed cotton on hand bears a much larger proportion to the consumption than the green American description.

3. The native cultivators do not appear to have given any, or at best very little attention to the improvement of their cotton. On the contrary, limiting our present observations to the produce of your presidency, the late consignments of cotton to England are represented to be almost entirely deficient of every property which is esteemed

esteemed by the British manufacturer; insomuch, that many persons, who were previously in the habit of using Surat cotton, have discontinued their purchases, and it is only from very great improvement that they can be expected to return to its use.

4. The course of public affairs, at the present time, has caused us to direct our attention in an especial manner to this subject, and to look to India for the means of rendering Great Britain independent of foreign countries for a considerable portion of a raw material, upon which her most valuable manufacture depends: the effecting of which would also lead to another not less important object, namely, that at the same time as it would add to the agricultural resources of our extensive possessions, it would also facilitate the remittance of the annually increasing political and commercial debt, for which India becomes liable to the mother country.

5. We are informed, that at least three-fourths of the cotton which is manufactured in Britain is the produce of Georgia and New Orleans in the United States of America, being known in mercantile language as Georgia Upland cotton and New Orleans cotton, and is exclusively the wool of the species of cotton which produces a green seed; and we are further informed, which is exceedingly material in the present consideration, that the Bombay cottons, particularly those of the growth

growth of the districts near Surat and Broach, are little or nothing inferior to the upland American descriptions above named, the item of cleanness alone excepted, and that such Indian cotton might readily be brought into competition with the upland American. We are aware that it has been stated in a letter in your Commercial Department, that the seed of the cotton which is cultivated near Surat is black; but as the cótton usually grown throughout India is almost universally of the green-seed species, and we find that the seeds which are very commonly intermixed with the cotton imported into London from Bombay are also green, we think it probable that your information may not have been correct on this point. But whether the seed of the Surat cotton be green or black is of secondary importance, as the produce which it yields, when carefully prepared, is much esteemed in the British market.

6. Assuming that the quality and condition of the Surat cotton shall become equal to that of the common American upland cotton, the next question that presents itself is, the rate of cost at which it can be produced. The price of the American cotton delivered at New York has been lately at ten cents (or five-pence sterling) per pound, and that cotton now sells in London at from six-pence to six-pence halfpenny per pound: but both the rate of cost at New York and the selling price in London are considered to be uncommonly low, the produce

produce of cotton in the year 1827 having exceeded the general demand, and the importation into Great Britain of the year 1828, although much short of the preceding year's supply, have been very ample. The price at the place of growth of the Broach cotton, which was exported to China per *Hythe* on the Company's account in the year 1826-7, appears by the invoice to have been 120 rupees per Surat candy, including factory charges, which at the rate of exchange of two shillings sterling the rupee, gives the cost three-pence three-farthings per pound; to which being added the expense of transportation to the presidency and packing for Europe, amounting to ten or fifteen per cent. more, gives a price of at least four-pence per pound for inferior cotton deliverable at Bombay, and worth in London, at the present time, not more than four-pence halfpenny per pound, against good cotton deliverable at New York at the cost-price of five-pence per pound, and selling in London for six-pence halfpenny per pound.

7. A slight encouragement has been extended by Parliament during the last session (9 Geo. IV. cap. 76) to the cotton in India in common with that of other British possessions, by the reduction of the import duty from its former rate of six per cent. on the value, to a fixed rate of four-pence per cwt., so that the quantity of cotton in a Surat bale will pay a consumption duty of about one shilling and two-pence, whereas the same quantity of American

rican upland cotton pays about twelve shillings; and as we think it may be reasonably supposed that the present exceedingly low prices of cotton-wool of all kinds may not be permanent, the recent alteration in the consumption duty will operate in favour of Indian cotton in an increased ratio as the general prices of cotton may increase. But it must be evident from what we have above said, that this Parliamentary encouragement will not be sufficient to introduce Indian cotton into general use in the home market, unless measures shall be taken in India for applying greater skill as well as capital to its cultivation.

8. Experience has convinced us, that the improved cultivation of Indian cotton, so as to render it fit for the British market, will not be effected merely by the countenance and occasional encouragement of Government; we have therefore resolved, that an experimental plantation for cotton shall be established, at the expense of the State, within the territories under your authority. The manner of carrying this into operation we are disposed to commit entirely to your judgment and local knowledge. It appears, however, that it will be advisable, in the first instance, that a piece of ground, either in the possession of Government or to be hired for the purpose, should be selected in the most suitable place that can be found (say to the extent of perhaps two hundred English acres), and that a person, either Native or European, of competent

competent skill in this branch of agriculture, should be entrusted with its management at a moderate monthly salary, under the general superintendence of the Collector of the district, or the Magistrate, or the Commercial Resident, as you may appoint.

9. The first object to be attempted should be careful cultivation of cotton raised from seed of the best of the indigenous plants of India, such as the Bhyratta kupas of Bengal (for a supply of which you will make application to our Governor-general in Council), or the best kinds at present grown about Surat or Broach, which will give sufficient employment for the first season; and before a second season shall arrive we will endeavour to furnish you with a supply of green seed from Georgia and New Orleans, which you will afterwards cultivate exclusively, or in addition to the native kinds, as experience shall render advisable.

10. You will issue instructions for furnishing the necessary funds from the Territorial department, and keep us fully advised of your proceedings herein. The cotton which may be grown upon this plantation you will consign to London, with a proper mark of distinction.

11. We have before shewn, that the cleaning of the cotton from its seeds and impurities is a point of nearly equal importance with that of improving its staple. Upon a former occasion, we transmitted to India machines for cleaning cotton,

cotton, of the best construction at that time, in use in the United States of America, and we also engaged the services of a person who had long resided in Georgia and was skilled in the use of them; but the object failed of success. We understand, that the excellent condition* in which American cotton is now brought to market, is owing to the almost exclusive use of a machine of more modern invention called Witney's saw-gin, which is represented to be so simple in its construction and so easily worked, that the cleaning of the cotton, which was formerly performed by separate tradesmen, is confided to the management of slaves. We shall supply you with a number of Witney's saw-gins as soon as they can be procured.

12. Although it is our desire that your attention should be chiefly given to the improvement of the native cotton, which we have particularly specified, and to the introduction of the upland American cotton, we see it right to suggest to you the expediency of further attempting, on a small scale, in different parts of the territories under your Government, the cultivation of all the finer sorts

* The American cotton is not only free from any admixture of seeds, but is also divested, in the most complete manner, of broken fragments of the pods and other extraneous matters, as well as of discoloured and damaged heads. Indian cotton, on the contrary, is greatly mixed with both.

sorts of foreign cottons in different situations as to soil, and particularly in districts bordering on the sea-coast.

13. We shall endeavour to procure various kinds of cotton-seed and transmit them to you for this purpose.

14. After what has been stated in the preceding paragraphs, it cannot be necessary to go into any lengthened course of observation, to impress upon our Governor in Council the importance of the object of our present despatch; and we confidently rely upon your zealous co-operation, in carrying into immediate effect the experimental measure which we have directed you to institute on the part of the Company.

15. It will still be expedient that the native growers of cotton should be incited to the improvement of its cultivation, and particularly to the rendering it more merchantable by careful cleaning; to which end you will give publicity to your undertaking, and distribute the seed gratis, or at a low price, as you shall see right; and also award premiums, or other encouragement, to such natives as may exhibit the most approved specimens, not less in quantity than five Surat candies, whether grown from the seed supplied to them from the Government farm or from the seed of the indigenous sorts.

16. At the same time, it appears desirable to obtain the advantage of the application of Euro-

pean

pean skill and industry to the attainment of the object in view; to which end you are authorized to grant to British subjects resident in India under our authority, properly qualified by character and by command of capital, a sufficient quantity of Government land for the establishment of a cotton plantation. The land to be secured to the parties on lease at a low rent for a term of years, on the condition of its being used for the cultivation of cotton; and in the event of difficulty occurring as to Government lands of a proper description and in suitable situations, permission may be granted to such British subjects to enter into engagements, under the usual limitations, with native proprietors, for land to be applied to the like purpose.

No. 61.

LETTER *from the Court of Directors to the Governor-general in Council in Bengal, dated the 8th July* 1829.

Par. 1. You will have observed in our letter to the presidency of Bombay, under date the 18th February last, that the course of public affairs at the present time, has caused us to direct our attention in an especial manner to the great importance of improving the cotton grown in India, and also to the introduction of the seed of new and better species, together with the best

machines for cleaning cotton from its seeds and impurities, with the view of rendering the produce of our territorial possessions fit for the general consumption of the manufactures of Great Britain. Extract of our letter to Bombay is sent in the present packet for more immediate reference, as also extract of our letter to Bombay in the Commercial department, dated 3d June, upon the same subject.

2. We are in daily expectation of the arrival in London of the cotton-seed noticed in our letter to Bombay, and also of a supply of machines for cleaning cotton; and it is our intention to send to your presidency a portion of the cotton-seed, together with one or two of the machines.

3. We advise you at this time of the intended consignment, in order that you may issue such preliminary instructions as to you shall seem proper, for selecting a favourable situation or situations for instituting, upon the arrival of the seeds, an experimental cultivation of cotton upon a small scale, and we doubt not of your zealous co-operation in carrying this object into successful effect.

4. We have perused the papers laid before you by Mr. Assistant Surgeon Henderson, commencing 4th October 1825, and the subsequent correspondence with the Board of Trade thereupon, respecting the cultivation at Allighur of cotton which had been some years previously raised from American

American seeds of a casual importation into India. We observe with concern, that this attempt has failed, as the Board of Trade, after advising with persons able to form a competent judgment of its quality, have, in their report of 4th August 1826, pronounced it to be inferior to the common cotton of the country.

5. We have submitted the three samples of Mr. Henderson's cotton, received per *Minerva* in 1828, to the inspection of an experienced dealer, who reports that two of the samples appear to have been produced from North American upland seed, but are not superior in value to middling Bengal cotton. The third sample, from which the seed has not been separated, appears to possess a longer staple; but so little of the wool remains upon the seeds, that it is difficult to form a full opinion, and cotton in such a state would be of no marketable value here.

6. We take the present opportunity of adverting to the specimens of cotton produced in the Tenasserim provinces, noticed in your letter in the Secret Department, dated 29th December 1826. The specimens in question, which were received per *Princess Charlotte of Wales* in 1828, are considered to be superior to any cotton that has been imported from Bengal, and if in a perfect condition, would rank in the London market with very good Surat cotton and middling North American upland: but it is remarked, that this cotton,

 although

although not sufficiently divested of the seed, has nevertheless been somewhat injured in its staple, by the process of cleaning to which it has been subjected. It is desirable that a supply of cotton-seed should be obtained, if not already done, from the Tenasserim coast, for cultivation in our possessions in the peninsula of India, and particularly in the maritime districts.

No. 62.

LETTER *from the Court of Directors to the Governor in Council at Bombay, dated the 4th November* 1829.

Par. 1. Our letters have acquainted you with the measures we were taking, for obtaining from the United States of America various kinds of cotton-seeds, as well as the most approved machines used in the Southern States of North America, for cleaning cotton-wool from its seeds and impurities.

2. We have received the first supply of American cotton-seeds, which have been drawn from the crop of the year 1828. This supply comprises seeds of the species known as upland Georgia cotton, and seeds of the cotton of Louisiana known in commerce as New Orleans cotton, both being of the description called by the planters "green-seed cotton," the wool of which adheres to the seed

seed with a considerable degree of tenacity, fully as much as in the common cotton of India These are the kinds of American cotton which are most extensively used by the manufacturers of Britain. We also transmit a supply of the seeds of Sea Island cotton (which are black), the wool of which is much esteemed for the fineness and length of its fibre.

3. We have likewise received six of the machines for cleaning cotton, called Whitney's saw-gin, two of which we shall transmit to your presidency with the cotton-seeds. We have desired our agent to send us a description of the method of using the saw-gin in North America, and you shall be furnished with a copy as soon as it comes to hand. It is sufficiently clear from an inspection of the machine, that it is put in motion by manual labour, by means of a wheel and winch, with a revolving strap upon the small pulley-wheel that forms part of the machine itself, as shewn in a sketch drawing which will be found in the packet. The large wheel, or first motion, is very simple; upon which account, we suppose, it has not been transmitted to us from America with the machines. A wheel of this kind can, however, be readily constructed in India.

4. We have caused a trial to be made in our presence of the working of the saw-gin upon a small quantity of Indian cotton happening to be in our warehouses, which had been very imperfectly,

fectly, if at all, divested of its seeds; and although this experiment was made under the disadvantage of the cotton being old, very dry, and much pressed together, the result seemed entirely to establish the merit of the invention.

5. The Whitney machine, which it is our desire to introduce into India, has been noticed in the Parliamentary papers of the year 1828, in a report of an American Committee of Commerce, where it is said to be "so simple in its construction, and "so easily worked and managed, that the negroes "in the Southern States are employed to work it;" we cannot, therefore, entertain any doubt of the saw-gins being suitable to the process of cleaning cotton by the natives of India. We also conclude, that the Indian workmen will be competent to fabricate such machines for general use; but, in order to facilitate the bringing them into practice without loss of time, it is our intention to send you some separate sets of the circular saws, which are of iron (not steel), as the only part of the machine in the making of which there can be difficulty. These detached saws will also be useful as patterns for the native smiths; for the guidance of whom, we propose also to send a complete set of all the other parts of the machine which are of metal.

6. You will receive with the before-mentioned articles a small quantity of cotton-seed of the growth of Demerara in South America, which

although

although it is not unknown in India, we are desirous should be planted as a renewed experiment. It is of the black-seed kind, like the Sea Island, of which the wool readily parts from the seeds, and probably will not require the application of a saw-gin. This kind of cotton is cultivated with great success in the Brazils.

11. We transmit in the packet the following papers having reference to the culture of cotton, *viz.*

1. Remarks on the culture of cotton in the United States of America, which we have received from our Agent with the cotton-seeds.

3. Statement of the best method of cultivating New Orleans cotton, received in like manner.

4. Extract of Captain Basil Hall's Travels in North America, so far as regards the cultivation of cotton. But we must remark, that this author's statement of the mode of cleaning cotton by what he denominates Whitney's saw-gin, is not applicable to the machines now sent to you, but evidently refers to another American gin, probably like that which we sent to India several years ago.

12. We are strongly impressed with the opinion, that nothing but attention and perseverance is required to make Indian cotton-wool a productive article of export to Europe, and there is no commercial object connected with our Indian possessions

possessions of greater national importance. We
9. desire, therefore, that the arrival of the saw-gins in India be made matter of general publicity, and that such extracts from the papers now sent in the packet as you may consider likely to be useful to the general cultivators, be published at intervals in the newspapers, and that the methods pointed out be tried, as far as circumstances will permit, in the management of the Government farm.

13. We shall divide the consignments of gins and seeds upon the two first ships that may sail for Bombay.

14. We have prepared the like supply of machines and seeds for consignment to our Government of Bengal.

No. 63.

MINUTE *of a Committee of Correspondence, January 30th*, 1829.

The Chairman laid before the Committee a paper which he had received from Henry St. George Tucker, Esq., a Member of the Court, "On the Supply of Cotton from British India," which was read.

On the Supply of Cotton from British India.

My attention has lately been called to the important question of extending the importation of cotton-

cotton-wool from British India, both with a view to the great national object of rendering Great Britain, as far as possible, independent of foreign supply, in the first instance, of a raw material, upon which her most valuable manufacture depends, and also with a view to add to the agricultural resources of India, and in so doing, to facilitate the means of remittance from our extensive possessions in the East, which incur annually a political and commercial debt to the mother country. I shall therefore submit, in a summary way, the results which I have been enabled to obtain by consulting the public records, and by personal communications and correspondence with those individuals (Dr. Wallich and others) who appeared to me likely to possess the best information on the subject.

1. There are two species of the cotton-plant producing the wool which is used in our manufactures; the *gossypium Barbadense* and the *gossypium herbaceum:* and there are persons who maintain that an essential difference exists, not merely in the botanical character of the two species, but in the strength and durability of the filament which these plants produce. It is well known that the *gossypium Barbadense* is grown generally in America and the West-Indies, and may be designated the cotton of the West, while the species *herbaceum* is a native of Asia, and may be distinguished as the cotton of the East.

2. There are several varieties of each species,* produced probably by a difference in situation, soil, climate, and culture; and although the two species, with their several varieties, have an original and natural site, there is reason to believe that they can be cultivated indifferently, in any tropical situation favourable to the production of the plant generally.

3. The cotton of the West, as the raw material of our manufactures, has hitherto borne, and still bears, a much higher price in the markets of Europe than the cotton of the East; although it is contended, that the fabrics wove from the latter surpass, in the essential character of strength and durability, those which are manufactured from the cotton of America.

4. Without insisting upon the superiority of the eastern cotton as a natural production, its inferiority as an article of commerce, and its consequent depression in price, may be accounted for by the following circumstances, which operate in a greater or less degree in deteriorating its quality and merchantable value.

First. The best variety is not generally cultivated for exportation.

Second.

* Some naturalists reckon four species of the cotton-plant, and many varieties are enumerated by Dr. Lastreyrie and others. As I am not a naturalist, I shall not attempt to give botanical descriptions nor use botanical terms.

Second. The best situations are not always chosen for its cultivation.

Third. The mode of culture is essentially defective, the natives of India being in the habit of growing different articles of produce upon the same land at the same time, with little regard to a rotation of crops; and owing to this injudicious husbandry, and to carelessness and mismanagement in other respects, the shrub, which under proper care is elsewhere rendered biennial, triennial, and even perennial, is in India found to be an annual only.*

The cotton is not properly cleaned and separated from the seed; the machinery employed for this purpose being very insufficient, and greatly inferior to that now in use in America.†

Fifth.

* By some authorities it is considered judicious husbandry, to root up the plants every second or third year, and to change the seed periodically. The natives of India, where the plant is an annual, rarely, I believe, take the precaution to procure seed from other quarters, although this is known to be beneficial, both in rural economy and in horticulture. Where the cotton-plant is biennial or triennial, it is said to yield the best produce in the first year, and so far the Indian cultivation may be right in allowing the shrub to die off annually; but it still may be highly useful to change the seed and to practice a more useful husbandry.

† It has been urged, that the saw-gin tears and injures the filament, and so perhaps it does; but although hand-picking is very essential to aid in cleaning the cotton, it cannot become a substitute for machinery. In India, where labour is so cheap, the

Fifth. In consequence of the defects of the machinery, the essential oil of the seed is liable to be expressed and suffused over the cotton, to the injury of its colour and quality.

Sixth. The cotton being produced generally at a greater distance (in some instances not less than one thousand miles) from the place of export, and the state of the rivers at the season of gathering the crop not admitting of its being conveyed the whole distance by water, it is frequently warehoused for months at intermediate stations, and a whole season is often lost before it can be packed and screwed for exportation.

Seventh. During its progress to the place of export in loose bags or bales, partly by land and partly by water, it is much exposed to the inclemency of the weather; the bales are often rendered wet or damp* by the heavy rains which prevail in tropical climates, and the cotton seldom arrives at its place of destination without some discoloration and partial damage, incidental to its conveyance in open carts and ill secured boats, during

the process of cleaning the wool ought to be well executed; but the churker (or cylinders) used for separating the wool from the seed is a very rude machine, and leaves much to be done by the hand.

* It has been alleged, that the natives sometimes "damp" the cotton in order to increase its weight; but the defect may be referred, with greater probability, to other causes.

during a long land journey and tedious river navigation.

Eighth. Although attempts are made to clean the cotton, and remove the seed and particles of the pod and leaf, before it is submitted to the screw, this is never done effectually, and the extreme compressure to which the cotton is then subjected by this powerful machine, with a part of its seed and impurities still adhering, must tend to injure the fibre.

Ninth. The heat and moisture of the hold of a ship during a long voyage, in which great alternations of temperature are usually experienced, may also tend to injure the quality of the article.

Lastly. It may be observed, that the practice heretofore common in some of our provinces, of receiving the cotton in payment of rent and revenue, was calculated to make the cultivators more solicitous to increase the *quantity* than to improve the *quality* of the article. Their necessities, moreover, may be supposed to have compelled them often to gather their crop *unseasonably*, for the purpose of making these payments in kind; and it is well known, that cotton gathered in wet weather is liable to be materially deteriorated in quality and value. The practice of receiving payments in kind has been discontinued at Bombay; but effects are often felt long after the original cause has been removed.

5. Without assuming the superiority of the

Eastern

Eastern cotton as a natural production, the greater degree of strength and durability of the fabrics made from it may be referred, perhaps, to the following circumstances.

First. The thread spun with care by the hand is probably more perfect.

Second. The operations of the loom, when conducted carefully by the hand, are not so liable to injure the fibre as the process carried on by machinery.

Third. The process of blanching the brown web is effected in India by steam and the solar ray, and the texture of the fabric is not liable to be injured by the use of muriatic acid or other chemical solvents.

Fourth. The fabric, for the purpose of being rendered more even and beautiful, is not exposed to the very delicate operation of singeing off the ends of the thread and other excrescences.

Fifth. The raw material is not economized in our Eastern manufactures in any way to diminish the firmness and strength of the texture.

6. The *Bairati kupas*, the finest variety, perhaps, of the Eastern cotton, is produced only in small quantity in the districts north-west of Dacca, and is never exported, I believe, as an article of commerce. Its favourite site seems to be the high banks of the Ganges (or as it is called in a part of its course, the Pudnah), and its tributary streams; but as the country adjacent is liable to annual

annual inundation, the tract of land applicable to its cultivation is not extensive.* This variety, which is also called by the natives *Désy* (of the country), would seem to be, as the name imports, the indigenous cotton of Bengal, producing those unrivalled fabrics, which have been known and highly valued in Europe from the earliest period of authentic history.

7. Other varieties (the *Boghà kupàs*, &c.) are found in Bengal Proper, and are used in its domestic manufactures; but the cotton which is exported to Europe and China from Bombay and Calcutta, under the denomination of *Surat* and *Bengal*,† is produced chiefly in the tract of country lying

* Many years ago I resided in this part of the country, and was induced, from the great superiority of the *Bairati kupas*, to send the seed, with a model of the *churker*, to my native island (Bermuda), but the cultivation of cotton was not prosecuted in that island. The fibre of the *Bairati* is extremely fine, silky, and strong, but the staple is very short, and the wool adheres most tenaciously to the seed. I have in my possession a specimen of the thread, which has been above forty years in this country, and is apparently still perfect.

† The cotton exported from Calcutta as *Bengal*, bears a great variety of names on the spot (*Jalson*, *Kineb*, *Banda*, *Cuchaura*, &c.) derived from the place of growth or the principal marts to which it is brought for sale; but although the quality is very different, owing to a difference in soil, culture, and management, the cotton is all, I believe, of that description which Dr. Hamilton Buchanan designates *hill cotton*. The cotton of Surat differs from it only in consequence of the difference in local circumstances.

lying between the rivers Jumna and Nerbudda, and extending westward to the Gulf of Cambay. Cotton is also grown in the southern parts of the Peninsula, and is exported from Madras under the denomination of *Tinnevelly ;* but the quantity produced is not very considerable, and the strong durable fabrics manufactured in the Northern Circars are made from cotton obtained from the territory of Berar and the neighbouring districts. I may add, that attempts have been made to cultivate cotton on the Malabar coast, although it is understood that they were not attended with such success as to lead to a belief that the situation is favourable for the growth of the article.*

8. An experiment was made a few years ago, under the auspices of Lady Hastings, to introduce the cultivation of two varieties of the Western cotton (the Barbadoes and Brazil), at a place called Futteghur, in the vicinity of Calcutta ; but although the cotton produced was reported to be of good quality, the experiment was upon too small a scale, and bore too much the character of mere garden

* Attempts have also been lately made to cultivate cotton in the province of Cuttack, but I understand that they have not succeeded. More recently the cultivation of the plant has been undertaken in the Island of Saugor, but sufficient time has not elapsed to enable me to ascertain the result. Dr. Wallich is sanguine in his anticipations of success; and, in fact, it is well known that the plant likes an alluvial soil and the neighbourhood of the sea.

garden cultivation to furnish any decisive results. It may be observed at the same time, that the thread spun from this cotton was not considered by the Indian manufacturers to be by any means equal in quality to that obtained from their own native cotton, it being estimated by them at eight* and ten per. cent. below the value of the latter. This would seem to favour the notion that there is an *essential difference in the fibre of the Eastern cotton*: nor can it be disputed, that the Asiatic fabrics,† from whatever cause, are superior in strength and durability to the manufactures which are produced from the cotton of America.

9. The *bairati kupas*, although its fibre be fine and silky, and admirably calculated for the manufacture of the muslin or thinner fabrics, has the disadvantage of a short staple, while the wool adheres so closely to the seed that it is with difficulty separated; and this variety is otherwise, perhaps, too costly a production to enter largely into our manufactures.

10. Although

* Brazil eight per cent. worse, Barbadoes ten per cent. Both plants have, under culture, been found to be triennial (*i e.* they produce for three years). The shrub will last longer, but is not productive after the third year.

† The nankeens of China are, perhaps, the stoutest cloths manufactured from cotton; and yet we do not know the plant which produces the wool, nor are we agreed whether the colour be natural or artificial. The wool of the *gossypium religiosum* has much the same colour, but it is not supposed that the nankeens are made from this cotton.

10. Although some of the finest cotton is produced in islands and situations within the influence of the sea, this circumstance does not appear to be essential to the perfection of the plant, since a large portion of the article used in our manufactures is grown in districts very remote from the sea. Still it is of importance, that the cultivation of the article should be promoted as much as possible in situations which are near the coast, or which have an easy communication with our sea-ports, because any difficulty or delay attending its exportation not only occasions expense, but in many cases renders the cotton liable to deterioration in quality and value.

11. *It would appear from the papers lately printed by Parliament on the American tariff,* that the cost of cotton grown in the United States has of late been very materially reduced, either by improvements in their domestic husbandry and in the mode of cleaning the cotton, by opening and extending numberless channels of internal communication, or by other means.

At their principal sea-ports the price of cotton is now about ten cents, or five-pence per lb.

In Calcutta the ordinary price of Bengal cotton is twelve* rupees per maund, or about four-pence per

Dr. Hamilton Buchanan, in his statistical account of Dinagepore, estimates that cotton can be produced in India at a very low cost. Circumstances have, no doubt, changed within the

per pound; but the latter article incurs a heavier charge for freight and other outlays, while it usually sells in the English market at about two-pence per pound below the price of good American cotton.*

12. In the United States, the cost of subsistence and the wages of labour are considerably higher than they are in British India; and other circumstances being nearly equal, this ought to give us a material advantage in producing a raw material for the supply of a foreign market. In point of fact, the Americans, at no very remote period, did actually import cotton-wool from India, although it was charged with a duty of three cents per pound; but being landed for about fifteen cents, or seven-pence halfpenny per pound, it came into successful competition with their own produce, which bore at the time a price of from eighteen to twenty cents per pound.

13. In

the last twenty years; but there is reason to believe that, under a proper system of culture, the article could be grown in many of our provinces at a very moderate rate. The charges on the Company's cotton are at present very high, and it is sometimes found that the article can be purchased from individuals at the place of export at a price below the invoice cost of their investment; but the concern is surely susceptible of more economical arrangements. If the quality were good in proportion, the higher price would afford less matter for regret.

† I will annex late prices-current in this market and at Glasgow, in order to shew how widely the prices differ, and how important it is to attend to the quality of the article.

13. In the United States, although the cost of subsistence is much less than in England, the wages of labour are higher; and placing machinery out of the question, which may indefinitely multiply labour in either country, this lower rate of wages ought to give us a present advantage as a manufacturing people. But the wages of labour, which are generally regulated by the cost of subsistence, are comparatively high in America at present, because new objects, upon which labour *can be advantageously employed, are perpetually* presenting themselves, and the demand may therefore be considered to exceed the supply.

As the population increases and the objects of profitable employment are successively exhausted, the American labourer must be content with a less liberal subsistence, the wages of labour must gradually fall, and the advantage which we at present *enjoy will be turned in favour of that country* which produces the means of subsistence at the cheapest rate.

14. The public debt of the United States, which *does not at present exceed fifteen millions sterling*, is likely to be extinguished in seven or eight years, and the Government will then command a large surplus income, which may be applied to the *advancement of any national object. Imbued as* the people of that country are with a singular spirit of rivalry, eager in the pursuit of wealth, active, enterprising, and intelligent, is it not to be

expected

expected that their resources will be applied, by means of bounties and other encouragement, to force their produce and manufactures into every market of consumption? They have already made great progress in the establishment of different manufactures and in the introduction of machinery, and instead of importing largely, as they have hitherto done, from this country, they already supply their own consumption with the coarser cotton fabrics, and are likely from year to year to become less dependent upon any foreign supply. Nor do they confine their views to their own consumption. With that confident spirit which peculiarly characterizes them, they are already casting abroad and anticipating the hour when they shall supplant us in every market of the commercial world. They propose to meet us in China and in our own colonies and dependencies; and if, while they are thus rapidly advancing, this country should make no corresponding efforts to preserve her commercial superiority, and to uphold her manufactures by obtaining the raw material of the best quality, and at the lowest cost, who shall venture to say that their most extravagant anticipations will not be realized?

Adverting to the foregoing premises, which must be regarded only as the brief exposition of a question of deep interest, I would submit the following propositions:—

First. That it is become highly expedient, as a national object, to encourage and promote in British

British India the cultivation of the two species of cotton, or those varieties which are most esteemed, and which are likely to be found most suitable and useful in extending and improving the manufactures of this country.

Second. That, with this view, it is desirable to establish two or more plantations upon a large scale, under the superintendence and management of the public servants, for ascertaining experimentally the best system of husbandry applicable to the growth of cotton, and the species or varieties of the plant which can be cultivated with the greatest advantage in the soil and climate of British India.

Third. That if persons acquainted with the mode of cultivating cotton in America can be procured, one or more be sent out to India, to assist in the management of the experimental farms which it is proposed to establish; and that steps be also taken to procure from the Brazils, Egypt, the Isle of Bourbon, and other quarters, the necessary supply of fresh seed of the most approved varieties of the Western cotton.*

Fourth.

* The colour of the seed is a distinguishing character in cotton; but nature is arbitrary, if not sometimes capricious, in her arrangements, and the black and the green seed are converted into each other by a change of place and circumstances. The Sea-Island cotton, which bears so high a price in our markets, is from the black seed; but I am told that, if it be transplanted to the Upland or back country, the black seed

Fourth. That it be recommended to the Government to make choice of situations for such establishments contiguous to the sea, or having easy means of communication with a convenient sea-port, the coast of Tenasserim, and some of the districts on the west side of India, under the Gooment of Bombay, being considered likely to afford suitable situations for the purpose.

Fifth. That two or more of the machines known under the name of Whitney's saw-gin,* and now generally used in America for separating the cotton-wool from the seed, be prepared and sent out to India, to serve as models; and that every facility be given to the multiplication of this machine for the use of the Indian growers of cotton.

Sixth. That it be recommended to the Government

in the second year becomes green, and the length and quality of the staple undergo a great change. Upon the whole, however, the green-seed cotton appears to be that which enters largely into the great bulk of our manufactures, and to which our attention should be chiefly directed.

* I have endeavoured, but hitherto in vain, to procure Whitney's saw-gin in this country, or a model or drawing of it. I am led to believe that it is *only* an improvement upon the machine which was made by Messrs. Maudesley, the engineers, and sent out to India in 1814, for separating the wool from the green-seed cotton. A much more simple machine is used for the black seed, to which the wool does not adhere so closely. It is upon the same principle as the Bengal *churkhe*, but very superior to it in materials and construction.

ment to establish the cotton-screws, in all practicable cases,* nearer to the districts where the cotton is grown than they are at present, because the bales, when packed, will occupy less space, and be more secure against the weather in their passage to the place of export.

Seventh. That, in order to bring into operation the stimulus of private interest to aid in promoting a public object, and at the same time to obtain the advantage of European skill, industry, and enterprise, the Government of India be authorised to grant to any British subjects, properly qualified by character and by possessing the command of capital, such quantity of unoccupied land as may be judged necessary or expedient for the establishment of a cotton plantation, the land being secured to the parties on lease at a low quit-rent for a term of years, on condition of its being used for the cultivation of this article.

Eighth. That, in the event of any difficulty occurring in assigning Government lands of proper quality and in suitable situations for this purpose, the

* For instance, at Surat and Kalpee, on the Jumna, instead of Bombay and Calcutta. The Company's cotton is at present *half-screwed* at Kalpee; and an experiment was made a few years ago to complete the process of screwing at Surat, but the bales were reported to have burst, and the plan was abandoned. I cannot, however, persuade myself that, with the same materials and machinery, cotton cannot be screwed as well at Surat as at Bombay.

the Government be authorised to grant permission to such European British subjects to purchase from the Zemindars and others, or to rent for a term of years any quantity of land not exceeding five thousand begahs, which the parties will undertake and engage to employ in the growth of cotton.

Ninth. That the Governments of India be authorised to offer annual prizes for the production of the best cotton in the best merchantable condition, in quantity not less than one hundred maunds..

Tenth. That the Governments of India be instructed, generally, to afford every possible encouragement to promote the trade in cotton, by freeing it from all duties of customs* on transit and exportation, by facilitating the means of internal communication, and otherwise obviating, as far as possible, those causes of delay, which tend

* Cotton appears to have been charged with a duty of 3¼ per cent. at Surat. A transit of 12 annas per maund is levied in our Bengal provinces, but the whole is drawn back on the cotton being exported to sea on British bottoms. This system may have some slight tendency to encourage our shipping, but it leaves the Indian manufacture subject to a high tax on the raw material; and it is, moreover, a great disadvantage to the exporter, to be compelled to advance the duty, and to be subjected to detention at successive custom-houses for the payment of the duty, for the examination of the passes, and subsequently for the purpose of establishing his right to the drawback.

tend to enhance the cost of the article, and to prevent British India from carrying on a successful competition with other countries, and from supplying the mother country with a raw material, constituting the basis of a manufacture upon which her commercial prosperity mainly depends.

(Signed) Hy. St. Geo. Tucker.

East-India House,
17th November 1828.

Current Prices of Cotton.

		GLASGOW. *d.* *d.*	LONDON. *d.* *d.*
North America, Carolina, and Georgia	Sea Islands	13 @ 18 ℔ lb	None in market.
	Uplands	6 — 7½	6 @ 7¼ ℔ lb
Lousiana, New Orleans		7 — 8½	6 — 8
Demerara		7½ — 9	7½ — 8¾
Berbice		..	7½ — 8¾
West-Indies		6 — 7	6 — 6¾
Carthagena		4½ — 5	—
Brazils, Pernambuco		8 — 8½	8 — 8½
Maranham		7 — 8	7½ — 8
Bahia		7 — 8	7¼ — 8
Para		..	6½ — 7
Bourbon		6 — 9	7 — 10
Surat		4 — 6	3¾ — 5¼
Bengal		3½ — 4½	4 — 4⅝
Madras		not quoted.	4 — 5½
Egyptian		7½ — 9	7½ — 8½
Manilla		6 — 7½	—
Smyrna		not quoted.	7½ — 8½
Mines Noves		..	6½ — 7
Mines Gernes		..	6 — 6½

No. 64.

Extract Letter *from the Court of Directors to the Governor in Council at Bombay, dated the 3d June* 1829.

Par. 2. Our letter in the Public Department of the 18th February informed you that we had given our renewed consideration to the improvement of the quality of the cotton at present grown in India, and to the introducing new and better species; and that, in order the more certainly to attain this desirable object, we should endeavour to procure from America various kinds of cotton-seed, *together with the most modern and improved* machines for cleaning the cotton from its seed and impurities.

3. We have accordingly taken measures for obtaining the machines and seed, and shall forward the same to you immediately upon our receiving them.

4. But in our letter above quoted, we have called your more immediate attention to the careful cultivation of cotton raised from seed of the best indigenous plants of India, such as the Bhyratta kupas of Bengal, and the best kinds at present grown about Surat or Broach.

5. Following up this part of the subject, and in order to enable us to import into London, with as little delay as possible, a supply of Indian cotton fit

fit for the general purposes of the British manufacturer, we now desire that you will obtain on the Company's account a quantity of Broach or Surat cotton of the harvest of the season 1829-30, to be gathered and prepared with the greatest attention, and which we shall expect to receive in London in the latter months of the year 1830.

6. As the provision of cotton for the Company in the Broach districts is not made by advances of cash to the cultivators previous to the seed being sown, but is conducted in the same manner as by private merchants (*viz.* through the agency of Dullots, who undertake to deliver the cotton at the Company's godowns at a fixed price per bahar), there will not, as we understand, be any existing engagements which your Commercial Department can at once make available to our present object; it therefore appears to us, that our intention may be best carried into effect in the following manner, *viz.*—

7. That immediately upon the receipt of our present instructions, you direct the Commercial Resident at Broach to take the necessary measures for securing, from some of the most favourable districts under his Residency, a quantity of the cotton which will have been already sown; for which purpose he will make arrangements with patels, or other proper persons, to be wholly distinct from their undertakings to deliver cotton for the China market; or if this

canno

cannot be conveniently done, part of the growth of the cotton intended for consignment to China in the year 1830 may be transferred to the object of our present despatch; as either of such courses shall appear best adapted to ensure a supply of superior cotton without unduly enhancing the price.

8. We have formerly received consignments of Surat cotton, which, in respect both of staple and cleanness, were greatly esteemed in the London market; and we now wish to procure a further supply of equal or superior goodness, and which we are led to think might be obtained, if the processes of gathering and cleaning were conducted with sufficient care.

9. A premium or enaum, either of money or honorary dress, was formerly granted to the ryots for *clean-picking* the kupas from the shrubs, whereby the cotton was obtained free of leaf and fragments of the pods, and it may be expedient to revert to this custom on the present occasion. We are aware that the cleaners of cotton (buckharias) are a distinct class from the cultivators; but as the work of these people is confined merely to the separating seeds from the wool, it would seem that less depends upon them than upon the persons who gather the pods. Nevertheless, rather than our object should suffer obstruction, we would consent to a small extra remuneration being granted to these people also. If the cotton be not

not cleaned within the premises of the patel or other person with whom the Commercial Resident may engage, great care must be taken that the cleaners return back the identical cotton which had been delivered to them.

10. The quantity of cotton to be prepared as above, which you may be enabled to provide in the season, must be uncertain. If it can be really such as we desire, we should have no objection to the provision being carried to the extent of five hundred bales. Whatever the quantity may be, you will please to consign it to London on hired tonnage, conditioning that the ship shall deliver it to us in the East-India Docks.

11. The invoice should contain all the particulars of charge in detail, together with brief explanations of any items that may seem to require it.

12. It has at various times become matter of consideration, whether Indian cotton suffers deterioration from the pressure which it sustains in the operation of packing by iron-screws. We have not had any very correct means of ascertaining this matter; but, from the opinions we have occasionally obtained, it would seem that the cotton is not greatly, if at all, hurt by pressure. American cotton has, however, been imported hitherto in "bags" lightly packed, and it may be possible that part of its superiority over Indian cotton may be owing to this circumstance. But looking to the large

portion of the aggregate cost of Indian cotton, which is caused by the freight, we see no remedy for this disadvantage, if indeed it be one.

13. The Bengal cotton is screwed to the density of 1,517 lbs. of net cotton, besides the packing materials, into a ton of fifty cubic feet; the Bombay cotton, in like manner, to 1,812 lbs. of net cotton in the same space. American cotton, in general, does not appear to have been pressed into bales by machinery, and is possibly not closer than 700 lbs. net cotton to the ton: but, from an inquiry we have made into this subject, we find that a practice has lately been introduced in New Orleans, of packing the cotton into what are termed *square* bales, which must have been effected by machinery; and that the price of the freight to Great Britain is somewhat lower for cotton in *square* bales than in bags. We have ascertained the density of some of these *square* bales of New Orleans cotton, now in London, to be 844 lbs. net weight of cotton to the ton of fifty feet.

14. As a matter of experiment, therefore, we desire that one-tenth part (say fifty) of the bales of cotton ordered in the preceding paragraph be packed in bales of the usual size, but to the density of about 900 lbs. of net cotton to the ton of fifty feet; so that, instead of compressing 363 lbs. into each bale, it will contain about 249 lbs. only.

No.

No. 65.

EXTRACT LETTER *from J. Farish, Esq., Warehouse-keeper, to Thomas Williamson, Esq., Secretary to Government, Bombay, dated the* 1*st December* 1829.

Par. 4. It is certainly the case, that of late years the quality of the cotton from the eastern side of the Gulph of Cambay, which was formerly the most valuable, is much deteriorated, from the careless way in which the kupas is gathered, having fragments of leaf and pod mixed with it, and by the practice of exposing it to the night dews in order to increase the weight. The course pointed out by the Honourable Court will prevent this; and it may reasonably be hoped, that the prospect of a premium, or enaum, as formerly granted, may induce the cultivators to deliver cotton equal to the thomil cotton of former years.

No. 66.

EXTRACT LETTER *from the Governor in Council at Bombay to the Court of Directors, dated the* 31*st December* 1829.

Par. 55. We have the honour to report the measures we have adopted for carrying into execution the orders conveyed in the twenty-second to thirty-seventh paragraphs of your Honourable Court's letter dated the 18th February last, for

establishing

establishing an experimental plantation for cotton in the territories under this presidency.

56. From our proceedings of the 29th July last, your Honourable Court will observe that measures are in progress for establishing the farms in Guzerat and in the Deccan.

57. The farms in Guzerat have been placed under the superintendence of Mr. Finey, whom, from his knowledge and experience on an indigo plantation in Bengal, we appointed to the charge, under the control of the Collector, on a salary of Rupees 500 per month, and granted him an allowance of Rupees 40 per month as house-rent.

58. The experimental farms in the Deccan, Candeish, and Dharwar, have been placed under Dr. Lush, the Superintendent of the Botanical Garden at Dhaporee. To this gentleman we have not at present deemed it necessary to assign any allowance, beyond what will be necessary for the reimbursement of his travelling charges while moving from his station.

59. We have instructed the Collector in the Northern Concan to establish a few plantations on the island of Salsette, where cotton, it is understood, might be grown with advantage.

60. Your Honourable Court will also observe, that we have notified to the principal mercantile firms at this presidency, our readiness to act upon your Honourable Court's orders to grant them lands for a cotton plantation, and of our determi-

nation to extend the proposed indulgence, by allowing Europeans, who might be desirous of raising indigo, or any particular kind of produce, to hold land for that purpose, the tenure being in all cases leasehold and not proprietary.

No. 68.

EXTRACT LETTER *from the Court of Directors to the Governor in Council, Madras, dated* 18*th August* 1830.

Par. 14. Your letter of the 16th October 1829 acquaints us, that as you consider the inferiority of the Madras cotton to be attributable to the character of the plant rather than to the soil or climate, and from a desire to encourage any measure which holds out a prospect of fair remittance to England, you had been *induced to view in a favourable light* a proposal from a Mr. Fischer, for supplying the Company with a small quantity of cotton, the produce of Mauritius seed, to be delivered at Madras at 115 rupees per candy; and as the quality of the sample which had been submitted to you was decidedly superior to any which had been produced in Coimbatore or Tinnevelly, you had no *doubt of its obtaining* a better *price in* the *Chinese* or English markets.

15. We have noticed in our letter to you of the 8th October 1823, that Bourbon cotton was not then

then in request, the finer assortments being scarcely vendible, and there has not been any improvement in its market value from that time. Indeed it is stated by Mr. Ryder, a dealer in cotton, in his evidence before the Committee of the House of Lords on East-India Affairs, 23d May 1830, "that "since the Sea-Island (American) cotton has been "cultivated to the extent it has, Bourbon cotton "has gone entirely out of use."

16. Mr. Fischer himself seems to have been aware of the want of demand for fine long-stapled Bourbon cotton, as in a letter to the Superintendent of Investment, entered on your Consultation of the 6th January, 1829, he observes, that the state of the markets at home did not admit of a profit to the private merchant; but that merely to keep alive the cultivation of a plant, the introduction of which had been attended with so many difficulties and so much expense to Government, he had made small advances for it annually, and still held the produce unsold in England and in India.

17. Sixteen bales of the cotton you have purchased of Mr. Fischer have been received per the ship *Lady Macnaghten*, and examined by persons of great experience, who report that "this cotton "is very clean and of good colour; the staple, "though rather uneven in length, is fine as well as "strong; and that a parcel of about five hundred "bales would, in the present state of the market,

 "readily

"readily produce sixpence three-farthings to se-"ven-pence per pound."

18. This opinion is very satisfactory, so far as respects the value of such cotton in the home market, compared with the current prices of other kinds of Indian cotton, as stated in the margin:* but the cotton purchased of Mr. Fischer is not of the same quality as the cotton of the Mauritius, known in the London market under the name of "Bourbon," and is inferior to the parcels raised from Bourbon seed which have formerly been imported from India. It is not, therefore, to be viewed as coming within the description of cotton spoken of by Mr. Ryder in his evidence, but is rather to be considered as a very favourable sample of Indian cotton; and we have reason to believe that consignments of such cotton, if offered at a moderate price, would at all times be marketable in England, where the annual consumption exceeds two hundred million of pounds,† but of which the

* *Current Prices, 22d June 1830:*

		d.		d.	
Bengal Cotton	..	$3\frac{7}{8}$	to	$4\frac{1}{2}$	per lb.
Surat ..	..	$3\frac{3}{4}$	—	$5\frac{1}{4}$	—
Madras ..	..	4	—	$5\frac{1}{2}$	—
New Orleans	..	6	—	$7\frac{1}{2}$	—
Georgia ..	..	$5\frac{7}{8}$	—	$6\frac{3}{4}$	—

† The quantity of Cotton consumed in Great Britain, on an average of three years ending 5th January 1830, was 218,484,094 lbs.—*Parliamentary Papers of 17th June 1830.*

the proportion from India has of late years been very small, and appears to be decreasing. It must, however, be noticed, that the reduced price, as it is termed, of Mr. Fischer's cotton, of 115 rupees per candy, seems greatly too high, when the native kinds of Coimbatore cotton can be obtained for less than ninety rupees, and of Tinnevelly cotton for less than eighty rupees per candy of 500lbs.

19. The invoice cost of the bales per *Lady Macnaghten*, calculating the Madras rupee at the moderate exchange of one shilling and ten-pence halfpenny, is five-pence halfpenny per pound, to which if three per cent. be added for sea insurance, and two per cent. for charges in England, with only one penny per pound for freight, the cost amounts to seven-pence per pound, being its full worth in London. We shall, however, direct that this cotton be sold forthwith, when its true value will be exactly ascertained. It appears, however, sufficiently clear, that if cotton of this quality can be grown at the common average price of the Coimbatore produce, it may become an article of advantageous exportation to England.

20. We take this opportunity of noticing that Mr. Fischer refers to a circular issued by the Collector of Coimbatore, requiring the Tasildars of the talooks to inform him whether the ryots were willing to cultivate cotton of the Bourbon seed, for and on account of Government, and to what

extent

extent; but we cannot trace this matter further, either in the Revenue or Commercial Departments, and consequently are unable to offer any opinion upon it.

21. We cannot but greatly lament the distress that must be occasioned to the cultivators, who have been many years employed in raising cotton for the Company's China investment.

22. We have adverted in a preceding paragraph to the importance of improving the cotton-wool of India, so as to bring it into a considerable participation of the general demand in the European market.

23. With a view to the attainment of this object, we have procured from America, and sent to our Governments of Bengal and Bombay, a supply of cotton-seeds of the species generally cultivated in the North American States of Georgia and New Orleans, and cotton-seeds of other kinds, together with a machine which has been lately invented in America for cleaning the cotton from its seeds, called "Whitney's saw-gin." We are in daily expectation of a further supply of seeds, and it is our intention to consign part thereof to your presidency, together with two of these saw-gins, which are a very different apparatus from the American gin formerly sent to you with Mr. Bernard Metcalfe.

25. Our views and intentions in respect of the cotton-seeds and the gins, are fully stated in our letters

letters to the Governor-General in Council and to the Government of Bombay, copies of which are sent in the packet for your information and government, so far as they may apply. It is not, however, our wish that you shall establish an experimental farm, as directed at Bombay.

26. The method of using Whitney's saw-gin not being sufficiently explained in the papers to which we have had access, we desired the merchants at New York, who provided the gins, to obtain the best information in their power upon this point. The questions put by them to the maker of the gins, with his answers, dated at Columbia 9th December 1829,* will be found in the packet.

No. 69.

EXTRACT LETTER *from the Governor-general in Council, Bengal, to the Court of Directors, dated the 22d September* 1830.

Par. 123. A copy of these paragraphs, with the enclosures therein referred to, was sent in original to the Territorial Department, that measures might be taken in that department to make the experimental cultivation ordered by your Honourable Court with the seeds transmitted.

124. The

* See Appendix to Collection of Papers.

124. The Engineers of the Calcutta Mint were instructed from the Territorial Department to set up the two saw-gins, and to send one of them for public inspection to the Town-hall. The other machine with saws we directed to be forwarded, through the Board of Trade, to the Commercial Resident at Etawah and Calpee, for his report upon its fitness, or otherwise, for use in this country. The result will be duly communicated to your Honourable Court.

No. 70.

EXTRACT LETTER *from the Governor in Council at Bombay to the Court of Directors, dated the* 17*th November* 1830.

Par. 6. With reference to the tenth paragraph of our despatch, dated the 18th August last, we have now the honour to acquaint your Honourable Court, that we consigned to the port of London 325 bales and some bags of cotton on the ship *Elizabeth*, J. Jenkins, commander, at a freight of 5*l*. 15*s*. per ton.

7. On the receipt of your Honourable Court's letter dated the 3d June 1829, we issued instructions to our Commercial Resident to the northward to provide cotton for the English market of the quantity and quality which you had ordered; but

we

we regret to inform your Honourable Court, that that officer was unable to consign more than 300 bales of Broach *thomil* in time to be despatched to London, owing to the great difficulty he had experienced in obtaining from the ryots good *kupas*, and also to a heavy fall of rain which had wetted the cotton, and consequently very much retarded the operation of cleansing it from its impurities.

8. Being desirous, however, to comply, if practicable, with your Honourable Court's wishes, we directed our Warehouse-keeper to make up the 500 bales from the cotton that had been purchased for the China market, which was of a superior description; but as it appeared from that officer's reply that he was unable to select cotton of the quality required, we relinquished our intention of completing the investment to the extent you had ordered.

9. In addition to the 300 bales provided to the northward, we have also consigned a small portion of cotton, being 25 bales and some bags, produced at the experimental cotton-farm at Broach, and which was pronounced by a Committee of Native Merchants to be five or six per cent. more valuable than the best Broach *thomil* purchased by our Commercial Resident.

10. The directions in the fourteenth paragraph of your despatch dated the 3d June 1829 have been attended to, and in order that you may be better enabled

enabled to solve the doubts which still seem to be entertained, as to whether Indian cotton really suffers deterioration from pressure or not, we beg leave to inform your Honourable Court, that we have directed that part of the cotton produced at the cotton experimental farm at Broach be close pressed and screwed, and part packed loosely in bags; and at the same time to observe, that it is the general opinion of men possessing experience in mercantile pursuits, that Indian cotton does not suffer injury from being pressed, provided when packed it is dry and free from foreign substances.

No. 71.

EXTRACT LETTER *from the Governor in Council at Bombay to the Court of Directors, dated the* 21*st December* 1830.

Par. 2. We beg leave to inform your Honourable Court that some time ago a proposal was made to us by one Buswunt Sing, an enterprising and respectable merchant in Ahmednuggur, through the principal Collector, to cultivate and supply Government with cotton. One of the principal conditions for which he stipulated was, that he should have an advance of cash to the extent of a lac of rupees, but without any interest being charged, and which sum was to be repaid by instalments

stalments of rupees 20,000 (twenty thousand) per annum.

3. Being aware that your Honourable Court are very desirous that the cultivation of cotton should be so improved, as to enable it to successfully compete in the English market with that produced in America, we of course felt disposed to afford every encouragement to enterprises which were likely to further the views of your Honourable Court, and we therefore called upon the principal Collector for more definite information as to the plans which Buswunt Sing intended to adopt, and the purposes to which so large an advance of cash were to be applied.

4. We do not deem it necessary to bring to your Honourable Court's special notice the corrrespondence which took place on this subject, and it will be therefore sufficient to state, that from the communications we received from the principal Collector of Ahmednuggur, it appeared that Buswunt Sing's proposal was of such an unreasonable nature, that, anxious as we were to encourage such speculations, we did not consider we should be justified in accepting terms which were so disadvantageous to the interests of Government as those he proposed, and therefore declined entering into any engagement with that person.

Shortly after, however, we had refused to accept Buswunt Sing's first proposal, another but more moderate offer was received from him, through

through the principal Collector; and as we were still willing to afford him every reasonable encouragement, and felt convinced that it would be for the interest of Government to close with his modified offer, we accordingly authorized that officer to enter into an engagement with Buswunt Sing to supply us with cotton upon the following conditions.

That the cotton was to be delivered into the warehouse at Bombay at the rate of 118 Bombay rupees per Surat candy of 784 lbs.

That if it was not perfectly clean it was liable to be rejected.

That at the beginning of each season, a maund of the cotton which was to be delivered was to be sent to the Warehouse-keeper, as a specimen and for inspection.

That the whole of the deliveries were to be of the quality of the specimen which had been approved of, or otherwise to be liable to be rejected.

6. To these conditions, however, Buswunt Sing would not consent, unless he had an advance of cash to enable him to commence his undertaking; and as we did not wish, for a trifling pecuniary accommodation, to forego the benefits likely to result, both in a commercial and revenue point of view, from the success and extension of enterprises such as Buswunt Sing's, we authorized the principal Collector of Ahmednuggur to advance him

him the sum of Rupees 25,000, taking substantial security for the repayment of the same.

7. We shall not fail to report the success, or otherwise, which may attend this man's speculation, and we trust that the encouragement and pecuniary assistance which we have afforded him will meet with the approbation of your Honourable Court.

No. 72.

LETTER *from the Assistant-Secretary to the India Board to the Secretary to the Court of Directors, dated the* 30*th December* 1830.

SIR:

I am directed by the Commissioners for the Affairs of India to transmit to you, for the purpose of being laid before the Court of Directors of the East-India Company, an extract from a letter which has been received by the President of this Board from Mr. Cobet of the Hague, respecting a machine which he has had constructed for the purpose of cleaning cotton from its seeds and other impurities.

I am, Sir,

Your most obedient and humble servant,

(Signed) B. S. JONES.

Peter Auber, Esq.

No. 73.

EXTRACT LETTER *from Mr. Cobet to the Right Honourable Charles Grant, dated at the Hague, 21st September* 1830.

I have got constructed in this country a very simple machine for the purpose of cleaning the most inferior qualities of raw-cotton from all its seeds, husks, and other impure substances with which it usually arrives mixed up, from the different colonies and from all the East-Indies in particular. The instrument upon which I performed my experiments would require one-horse power, but might be made to work by either hands, bullocks, and other animals, or by water, wind, steam, &c., as circumstances would prescribe. Of Surat the above mill would cleanse about two thousand pounds within twelve hours by passing it but once, as has been the case with sample No. 1, and of which also one is added in its original state. Of Surinam, however, (as contained in No. 2, which had to undergo the same operation twice,) but half the quantity can be obtained within the mentioned time.

The loss in weight would average from eight to thirteen per cent., but the increase of value in the market by this improvement would be from forty to sixty per cent.

If the Honourable East-India Company were to adopt

adopt this process in the colonies, the loss of the spurious matter in weight would be more than compensated in the saving of freight alone, and thus immense profits might be got in exchange for cheap and easy labour. But whether my mill would be made use of across the Atlantic or in Europe, its extensive advantages must be obvious on even superficial examination.

Any further information which you might require on the subject shall be duly attended to; and should the East-India Company be desirous of having a proper plan, or even of possessing the very machine which yielded my experiments, I beg you will command. My mill having previously given proofs of its efficacy, I shall leave to the liberality of the Company and in your hands, the fixing the amount of my remuneration agreeably to the merits of the invention.

No. 74.

REPORT *by the Company's Warehouse-keeper on Samples sent with Mr. Cobet's Letter.*

Sample, No. 1, *Surat Cotton.*

Remark.—Considerable quantities arrive from India in this impure state.

Sample, No. 1, *Once-cleaned Surat.*

Not sufficiently clean. The machine used appears to have done very little injury to the staple, which

which is a great point; but if the operation were repeated, the result might be doubtful.

Sample, No. 2, *Impure or Common Surinam.*

There has not been any Surinam cotton of late years in the London market. This sample would formerly have been denominated "waste of Surinam cotton." A few bales in every hundred were usually of this kind. The staple is long and possesses strength.

Sample, No. 2, *Twice-cleaned Surinam.*

This cotton is fairly cleaned, but would still require something more to be done before it could be manufactured. The staple is not much impaired by twice cleaning, owing probably to its strength.

The manufacturers at Manchester and other seats of the cotton-works have machinery for rendering the wool perfectly clean, so have the candlewick-spinners in London.

A great quantity of inferior Indian cotton, as to cleanness, is exported from England to Holland and the Netherlands, and it is probable that in those countries they may not yet have the means of cleaning their cotton so well as it is done here. The machine in question may, perhaps, be the best hitherto tried in Holland.

But

But with regard to the Honourable East-India Company's adopting "this process in the colonies," it should seem that it is not advisable at present to introduce the use of any new machine that has not stood the test of long and successful employment, in some country where cotton is produced and exported in large quantities. Various machines for cleaning cotton have from time to time been sent to India by private traders, which as well as an American one sent by the Company some years ago (under the superintendence of an American planter) have failed of success. Such was also the case with regard to two gins made for the East-India Company by Mr. Maudsley.

The Court are, however, at present expecting, with deep interest, information from the three presidencies with regard to the result of experiments they have ordered to be made with certain machines obtained from the United States, denominated, "Whitney's saw-gin." This machine, from its invention in North America some years since to its present improved state, is understood to have been the chief instrument employed in rendering the vast quantities of cotton exported from that country to Britain, in the clean and excellent condition in which it for the most part arrives.

There is, moreover, a reasonable expectation that *this* machine may prove suitable to the cotton of India which adheres to the seed, since it is certain that the cotton-wool of the United States,

called

called "Upland Georgia" and "New Orleans, adheres to the seed with the like tenacity.

(Signed) WILLIAM JOHNSON.

January 1830.

No. 75.

LETTER *from the Resident at Etawah and Calpee to the Board of Trade at Calcutta, dated the* 11*th June* 1831.

I have the honour to inform you that the saw-gin forwarded last year by the Export Warehouse-keeper arrived at Calpee too late in the season (end of February last) to admit of my making any trial of it. Had the machine, however, arrived earlier, I regret that it would not have answered the purpose intended, as it was not accompanied with any directions, and after cleaning it and carefully examining every part of it, I have failed to discover how it is to be worked; but it appears to me to require to have a winch or crank fitted to one or both ends of the principal cylinder, to give it a rotatory motion.

No.

No. 76.

EXTRACT LETTER *from the Governor in Council at Bombay to the Court of Directors, dated the 30th June* 1831.

We have the honour to forward a sample of Broach cotton prepared from *kupas* with a machine used in the southern Mahratta country, termed a foot-roller, and to draw the attention of your Honourable Court to the cotton, which is of a very fine quality.

2. The advantages which the foot-roller possesses over the *churka* in common use in Guzerat, consist principally in leaving the fibre straight and uninjured, and in giving to the cotton that delicate and cleanly appearance which can hardly be surpassed. But the expense of cleaning this staple commodity by means of the foot-roller is great, and enhances, as your Honourable Court will observe, the price full sixty rupees per Broach candy above the ordinary *raussee*.

No. 77.

LETTER *from J. H. Pelly, Esq., Acting Commercial Resident at Broach, to the Secretary to Government, Bombay, dated the 7th April* 1831.

1. I take the liberty of forwarding with this a sample of Broach cotton prepared from *kupas* with

 the

the foot-roller, mentioned in the fifth paragraph of my letter dated the 25th February last.

2. The advantages of this implement appears to consist principally in leaving the fibre straight, uninjured, and in fact in its natural state, whilst the delicacy of appearance and cleanliness of the cotton can hardly be surpassed.

3. Unfortunately, however, cleaning by this process enhances the price full sixty rupees per Broach candy above the ordinary *raussee*. The point therefore to be ascertained is, whether in the Europe market, for which alone it is adapted, it is likely to command an advanced price sufficient to compensate the expense thus bestowed.

4. It is not probable that any native in Bombay can determine this question, nor can any satisfactory information be expected, unless the opinion of some intelligent European, conversant with the manufacturing processes at home and with the several varieties of cotton employed in preparing the various fabrics there, be consulted. This I should hope might be accomplished, as it is highly important that the staple article of this part of India, on which trade and revenue so essentially depend, should possess the advantage of being used in manufacturing as wide a range of goods as its nature admits of. Hitherto, perhaps, the filthy and deteriorated condition in which it has been generally introduced into the European market, may have prevented justice being done to its natural properties.

No.

No. 78.

LETTER *from the Secretary to the Agricultural and Horticultural Society of India to the Secretary to the Board of Trade at Calcutta, dated the* 19*th July* 1831.

I have been requested to state, that the saw-gin was made trial of at the Glo'ster Mills, at the premises of Messrs. Alexander and Co., and at the Society's farm at Akra, for the purpose of obtaining an accurate report of its powers and applicability to this country.

I have not yet been able to obtain any written report from the proprietor of Glo'ster Mills; but the result of the trials at Messrs. Alexander and Co.'s and at Akra were highly satisfactory, both as to rapidity and perfection of work, completely separating the cotton from the seed without any injury to the latter. It was found, however, in both cases, that fewer than eight men could not keep up the necessary speed, independent of two men to feed her.

At the trial in Glo'ster Works, the power was communicated to the gin by a strap from one of their steam-engines, and the work performed was most beautiful and perfect.

The Society is not prepared to suggest to Government the best method of disposing of similar machines stated by you to have just come out, but if

if Government would so far confide in the Society as to place these machines at their disposal, they *would do their best endeavours to dispose of them* advantageously and bring them into general use.

No. 79.

EXTRACT LETTER *from the Board of Trade at Calcutta to the Bengal Government, dated Fort, William, the 25th October* 1831.

With reference to the third paragraph of Mr. Officiating Secretary Bushby's letter of the 17th May last, requiring us to report upon the efficiency of two saw-gins received from the Honourable the Court of Directors last year, and to state our opinion as to the disposal of similar machines lately imported on the Honourable Company's ships *Thames* and *Lady Melville*, we beg leave to lay before your Honourable Board the accompanying copies of letter from the Acting Resident at Calpee, and from the Secretary to the Agricultural and Horticultural Society. It appears from Mr. Truscott's communication, that the saw-gin which was forwarded in its original package to the Calpee Factory was found on arrival to be incomplete, and moreover was received too late in the season to admit of any trial being made of it, even had it been in all respects perfect. A very favourable

able report, however, is given by Mr. Robinson of the one which has been tried severally at the Society's farm at Akra, at the premises of Messrs Alexander and Co., and at the Glo'ster Mills.

2. Having conferred with the Society regarding the disposal of the machines lately arrived, and they having offered, through Mr. Secretary Robinson, to use their best endeavours to effect this in the most advantageous way, we respectfully suggest that they be accordingly made over for the present to the Society for that purpose.

3. Admirably adapted as the saw-gins in question are for extricating the seed from the wool, we entertain great doubts whether they could be brought into general use in this country, as the cotton-wool with the seed in it is never transported to any distance from the place of its growth, and the operation of separating the seed is performed by the women and children in the neighbouring villages, who could neither afford to obtain, nor would they understand the use of such machines.

4. The cotton with the seed in it, or *kupas*, being at least three-fifths heavier than the wool by itself, it would not bear the expense of carriage to any distant place, and the cattle of the surrounding villages are fed with part of the seed. Oil is also extracted from it, and part is kept for the next year's sowings.

5. Any machine of simple construction, which would separate the dirt, leaves, and other impurities

ties from cotton-wool, and thus supersede the hand-picking, would be essentially serviceable in this country, because such might be used, under skilful superintendence, at places of depôt to which the cotton is first brought. Eighty or one hundred machines of this description placed in the Calpee cleaning godowns, would do the work of from fifteen hundred to two thousand persons employed there during the import season, and cause, we imagine, much less injury to the fibre or staple of the cotton.

6. We have seen a machine of the above description at the Glo'ster cotton-works, and propose requesting to be allowed to try some experiments there with unpicked cotton which we have had sent from Calpee for that purpose, and will do ourselves the pleasure to submit the result to your Honour in Council, should it appear that any practical advantage is likely to arise from it.

No. 80.

EXTRACT LETTER *from the Governor-general in Council, Bengal, to the Court of Directors, dated the 25th October* 1831.

Par. 39. We directed the machines and metallic work to be sent to the new Mint, to be set up by the Superintendent of Government machinery, under whose care they would be

kept

kept until it could be determined in what way 1
they should be disposed of. We desired the 2.
Board of Trade to state whether the American saw-gin, formerly forwarded to the Commercial Resident at Etawah and Calpee, had been found to answer, and called upon them to ascertain and report the result of the experiments made with the same description of machine (both received last year from your Honourable Court) which we believed was then working at the Glo'ster mills. We likewise desired the Board's opinion, as to the disposal of the machinery which arrived by the *Thames* and *Lady Melville*.

No. 81.

EXTRACT LETTER *from the Secretary to the Bengal Government to the Board of Trade, dated Fort-William, 8th November* 1831.

Par. 2. The report of the trials with the machine lent to the Agricultural and Horticultural Society being so satisfactory, it is considered desirable by Government that experiments should be likewise made with the saw-gin at Calpee; the Board are therefore requested to acquaint the officiating Resident with the mode in which the engine is worked, and if any part is defective, as supposed by Mr. Truscott, which can be ascertained by sending

sending up a *plan of a complete machine* from Calcutta, to have it remedied.

3. The Vice-President in Council approves of the three pairs of similar saw-gins that were received this season by the regular ships *Thames* and *Lady Melville*, as soon as they are set up by the Superintendent of Government machinery, being made over to the Agricultural and Horticultural Society.

4. You will be pleased to apprize the Society of this resolution, referring them to Captain Forbes at the new Mint, who will be directed from this department to deliver the machines to their Secretary.

5. The Government will be anxious to hear from time to time in what way these saw-gins are disposed of, and with what results.

6. His Honour in Council expects from you a further report regarding the cleaning machine alluded to in the concluding paragraphs of your letter under acknowledgment.

No. 82.

Extract Letter *from C. Lush, Esq., Superintendent of the Botanic Garden at Dapooree, Poona, dated the* 11*th January* 1832.

I have the pleasure of enclosing such papers as I have by me on the subject of Whitney's saw-gin. One of these machines is about to be erected in Dharwar, and on its arrival I will require some one in my absence to send you a drawing and particular description.

The process of cotton-cleaning which I have hitherto adopted here has been quite independent of this or any other machine. The presence of the leaf which grows under the cotton-pod, is the main cause of the inferiority of our Indian cottons in the English market: this, with other impurities, gets into the mass of cotton in the act of picking in the field, and under ordinary circumstances cannot afterwards be got rid of. The radical remedy for this is to pick the cotton in the field with greater care, as is done in America, by carefully pulling the cotton out of the pod and not snatching at the pod itself, and separating the cotton picked into two portions, one of the first quality free from leaf and dirt, and the other such as may be entangled with the leaf and other impurities.

purities. This is done readily, after a little teaching, by the women, who separate their cloth into two compartments, and put the clean cotton into the right side and the dirty into the left.

The *kupas* after being brought home is cleaned in the usual way by the foot-roller; but as many seeds break and some remains of leaf may have escaped the gatherers, a number of hand-pickers are placed behind the foot-rollers when at work, and the cotton is passed gently through their hands when rolled out, and they take out every remaining portion of dirt and the fragments of broken seeds.

This is the only change I have introduced yet (although I expect with the saw-gin to improve the quality further); but the cotton so prepared has been so favourably reported, that our Government has appointed an agent to buy the cotton of the ryots, who, for an advance on the market rate, seem gradually more and more disposed to adopt the new plan, although very much opposed to it at first. Our climate does not appear to agree with the new cottons introduced from America, although I trust that the perennial cultivation will succeed. As that is now under experiment, it would be premature to pronounce an opinion; and from the urgent despatches of the Court of Directors, I am convinced that they will not be satisfied until every possible means of improving cotton has been fairly tried.

I shall

I shall be most happy, at all times, to afford any information in my power; but I will certainly recommend you to try the plan of clean-picking in the field, as the foundation of all improvement, and I have no doubt that the Madras Government would be anxious to introduce the saw-gin, which has been so highly recommended by the Court of Directors and by all practical men at home.

No. 83.

LETTER *from the Court of Directors to the Governor in Council at Bombay, dated the 6th March* 1832.

Par. 1. Our letter of the 3d June 1829, adverted to the measures which, as you had been apprized, we were taking for the purpose of procuring from America a supply of cotton-seeds and machines for cleaning cotton.

2. The seeds of several kinds of cotton, and also the cleaning machines, have subsequently been obtained, and have been consigned in proportions to each of our presidencies, the dates of which, so far as respects Bombay, are noticed in the margin;* but we have not hitherto received from India any cotton-wool the produce of those seeds.

3. In

* Public Letter to Bombay, 4th November 1829, and 7th January, 25th February, and 21st September 1831.

3. In the Commercial letter of the 3d June 1829, we desired that you would, without waiting for the American seeds, provide a quantity of Broach or Surat cotton to be gathered and prepared with the greatest attention, so as to render it fit for the general purposes of the British manufacturers; and, as a matter of experiment, that a small portion of such cotton should not be packed to the full power of your iron screws, but be compressed into bales of the usual density of the packages imported from the United States of America, which do not contain more than two-thirds of the quantity of cotton packed in India within the like space.

4. Your Commercial letter of the 17th November 1831, acquaints us, that you had accordingly issued instructions to the Commercial Resident at the Northern Factories, to provide cotton for the English market of the quality we desired; but you inform us, that owing to difficulty in obtaining from the ryots good *kupas*, and also on account of a heavy fall of rain which had wetted the cotton, no more than three hundred bales could be obtained.

5. This cotton has been received by the ship *Elizabeth*, and was sold at our sales in July 1831.

6. The staple of the parcel of 275 bales of Broach thomil cotton (part of the above), which

was

was packed according to your usual method, was considered by some of the dealers to be superior to that usually met with in Surat cotton: the colour was approved and the cotton was sufficiently clean. But others were of opinion that, although on account of its superior colour such cotton would be preferred for common purposes, yet, owing to the shortness of its staple, it could not rank higher than the very ordinary descriptions of upland Georgia cotton.

7. The average price which the bales that had been press-packed to the usual density* produced at our sales, was five-pence farthing per pound, which was also the value of ordinary Upland American cotton at that time. The first cost was Bombay Rs. 105. 1. 35. per Surat candy, which with charges of packing, &c., gave the invoice price of Bombay Rs. 138. 0. 64. per candy; and if three per cent. for sea insurance be added to the invoice cost, and the freight per *Elizabeth* of £5. 15*s*. per ton be deducted from the sale price, as also two per cent. for the charges of management in London, the remittance afforded by this thomil cotton amounts to one shilling and tenpence three-farthings per Bombay rupee. But this favourable remittance is in great part owing to the low rate of freight. If it had been consigned to London

* Pounds of Cotton in a ton, per Elizabeth, press-packed. 1.381.

London at the rate of freight of £8. 10*s*. per ton, which was paid to the ship *Earl of Eldon*, hereafter noticed, the remittance would have been only one shilling and eight-pence farthing per rupee.

8. The thirty bales of the same kind of cotton more lightly packed*, were considered by some dealers to have a better appearance than the close packed; but others pronounced that the lighter packed seemed coarse. It sold, however, at one farthing a pound above that which had been full pressed, and gave, at the freight of £5. 15*s*. per ton, a remittance of one shilling and nine-pence farthing per Bombay rupee.

9. The general opinion here, as well as in India, is, that the press-packing which Indian cotton usually undergoes is not injurious to it: indeed some persons think it rather advantageous, by rendering the fibres less subject to be affected by the atmosphere, especially if the cotton be kept in store for a length of time. But the great increase in the charge for freight of cotton when lightly pressed, precludes any prospect of benefit from adopting that method of packing in India, and it is probable that the advance of price experienced in this instance might not have taken place if the quantity had been large.

10. Your Commercial letter of the 17th November

* Pounds of Cotton in a ton, per Elizabeth, lighter packed, 902.

ber 1830 also notices, that you had received twenty-four bales and some bags of cotton from the Superintendent of an experimental farm which has been established at Broach, in pursuance of our instructions of the 18th February 1829 in the Public Department.

11. We collect from the papers annexed to your Revenue letter of the 15th June 1831, that Mr. Finey, whom you had engaged to institute and conduct the experimental farm, had been authorized, in September 1829 (the season for sowing cotton having then passed), to purchase a parcel of the plant growing in the districts near Broach, and that this cotton, gathered and cleaned under Mr. Finey's personal direction, had on its arrival at the presidency been there examined by a Committee of Native Merchants, who pronounced it to be superior in quality and cleanness to any they had inspected for many years, and you saw it due to Mr. Finey to express your satisfaction at the result of his endeavours in this particular.

12. We learn with much concern, that you were soon afterwards deprived of the services of that gentleman, his decease having taken place after a night's illness, contracted, as it appears, from exposure to rain in the active discharge of his duty.

13. The dealers in London have deemed this parcel of Mr. Finey's cotton to be perfect in colour and cleanness, but not to be superior in staple

to

to good Surat cotton. The price it obtained at our sales was six-pence farthing per pound nearly; the superior thomil cotton, provided by the Commercial Resident, selling at the same time for five-pence farthing, as above stated.

14. Some additional expense was incurred for cleaning this small parcel of cotton provided by Mr. Finey, which is not stated, except in general terms, that it was rather high; but it probably was not so great as to have prevented its affording a good remittance, if the additional charge had been added to the invoice.

15. Your Commercial letter of the 20th July 1831 informs us, that you had consigned, per the private ship *Earl of Eldon*, ninety-five bales of cotton of various kinds; but your Secretary's letter of the 30th of that month gives the particulars of 112 bales (some of them being small), which is the real quantity we have received; and your letter expresses a hope that the consignment per *Earl of Eldon* will be found equal to expectation.

16. Your letter also solicits our instructions respecting future consignments of cotton to England, to which we shall advert in a subsequent paragraph.

17. Without waiting for the result of an actual sale, we have obtained the opinion upon the consignment per *Earl of Eldon* of a house of business, on whose judgment great reliance may be placed,

and

and whose report upon the several parcels is to the following effect.* 6

18. The seventeen bales of thomil cotton marked BBT, provided by the Native Agent attached to the Commercial Residency at Broach, and stated to have been prepared by the common *churka* but with great attention, is considered to be clean bright cotton of good staple, got up in a superior manner and having very little waste: the present value five-pence halfpenny per pound.

19. The bale of the same growth prepared by direction of Mr. Pelly,† the acting Commercial Resident, with the Mahratta foot-roller, is clean and fleecy, and resembles American cotton; its present value five-pence three-farthings per pound.

20. This bale of cotton, as also the instrument peculiar to the South Mahratta country by which it was cleaned, are noticed in your Commercial letter of the 30th June 1831; but it is evident that the great expense which attends this method of cleaning cotton (sixty rupees per candy) must prevent its being generally adopted.

21. The

* Other opinions have also been obtained as under:

The seventeen bales clean and good staple for Surats, good colour, worth 6d. per lb.

† Bale cleaned by foot-roller, a very fine specimen as to colour and cleanness; somewhat injured in the staple; would not be approved by the manufacturers for general purposes may be worth sixpence per pound.

21. The fifty-one bales of cotton marked A* are part of a contract which you entered into with a Native Merchant at Ahmednugger, named Buswunt Sing, the price given to him being 115 rupees per Surat candy for the cotton delivered at the presidency. This parcel is of fair staple, but being rather stained, is less valuable on that account, and is estimated at five-pence per pound.

22. The six bales marked D, which you received from Dr. Lush,† the Superintendent of the Botanical Garden at Dhapooree, and which a Committee of Native Merchants considered to be very good, is pronounced here to be fleecy, and somewhat resembling the bale cleaned by the Mahratta foot-roller, but rather yellow in colour and short in staple: the present value five-pence farthing per pound.

23. The twenty-one bales marked F were raised at the experimental farm, and consist, like the rest, of cotton produced from native seed.

24. These twenty-one bales have been cleaned by the American saw-gin, under the direction of Mr. Martin, the person whom you appointed to succeed Mr. Finey.

25. We find in paragraph 22 of your Revenue

* Fifty-one bales, Buswunt Sing, good staple, but tinged with brown bits which are perished; clean for Indian cottons; worth five-pence halfpenny per pound.

† Dr. Lush's cotton, good bright colour, with a yellowish tinge, quite clean, and remarkably well got up; firm and heavy in the hand, good sound staple, but not fine; worth five-pence three farthings per pound.

letter of the 15th June 1831, that small samples of native cotton and of New Orleans cotton, grown on the farm and cleaned partly by the *churka* and partly by the American gin, had in November 1830 been forwarded to you by Mr. Martin, and were exhibited to a Committee of Native Dealers, who pronounced them to be of very fine quality, perfectly clean, and the staple remarkably good. These samples do not appear to have been sent to London.

26. Your Commercial letter of the 20th July 1831 states that a Committee of Native Merchants had reported the staple of the cotton cleaned with the saw-gin, marked F (*i.e.* Farm), to be remarkably good, and the cotton to be of the high value of 175 rupees per Surat candy. This report is dated the 20th April 1831, and is recorded on your Revenue Consultations of the 18th May.

27. But a letter from Mr. Pelly, dated the 13th April 1831, observes, that many persons had expressed an apprehension that the staple of the cotton might be injured by the cutting action of the saw-gin; Mr. Pelly had therefore requested the Superintendent of the experimental farm to prepare with the *churka* a candy of the same kind of cotton which had been cleaned with the gin, which was done accordingly, and produced the two bales marked F C (*i.e.* Farm *churka*).*

28. Samples

* The general opinion upon these two bales is, sufficiently clean for all the purposes to which upland Georgia cotton is applied;

28. Samples of the cotton cleaned with the *churka* were shown to a Committee of Native Merchants, together with the samples of the same cotton cleaned with the gin, and their report, dated the 14th May 1831, is, that the saw-gin renders the staple very clean, and would be preferred to the *churka*, but the *sample* does not bear the same strength as that turned out of the *churka*.

29. The opinion we have obtained in England confirms the report of the second Committee at Bombay. It is found to be clean, bright, handsome cotton, but very much injured in ginning,* the staple being cut to pieces. Its value five-pence per lb.

30. We are much disappointed at this result. The particular machine used on the occasion must have been one of the original number we received from America; there cannot, therefore, be any question as to its being of a proper construction for use in that country. Nor can we suppose there was any error in the mode of its application by

applied; staple rather fine, firm, and tolerably long; a good specimen of useful cotton, certainly worth five-pence half-penny per pound.

* The other parties who have seen this cotton, report it to be beautiful in respect of colour, staple coarse with a great mixture of very short. Not a desirable sort of cotton, being spoiled by the process of cleaning. Value uncertain; perhaps five-pence half-penny per pound.

by Mr. Martin, who appears to have been fully competent on that point; for we find, by his letter to the Collector of Surat of the 6th November 1830, that he was able to clean in a quarter of an hour with the American machine as much cotton as could be prepared with a *churka* in six hours. It has been suggested, that the cutting may have been caused by the saws being new and very sharp, and that the cutting may probably cease as the saws become worn with use.

31. If this be not the case, it must be feared that the fibre of the native Indian cotton does not possess sufficient strength and tenacity to resist the action of so powerful an instrument, and that the use of the American gin must be confined to cleaning cotton raised from American seeds: but this can be satisfactorily determined only by repeated and careful experiments, with a view to ascertaining the proper degree of velocity as applicable to Indian cotton. You have been informed, that in Georgia the gins are put in motion by horses, and that the revolutions of the saw-cylinders are from two hundred to two hundred and fifty in a minute, which may be too great in India. We wait for further information from you upon this point.*

33. Having

* Specimens of upland Georgia cotton with the seeds (*kupas* as it would be termed in India) are sent in the packet for the purpose of comparison.

32. Having stated all the particulars we are at present enabled to communicate respecting the qualities and value of the different specimens of cotton per the *Elizabeth* and *Earl of Eldon*, we have only to add, that we shall bring the latter consignment to sale without delay, and if any new point arise we shall acquaint you therewith.

33. We now proceed to consider your request to receive our instructions respecting future consignments of cotton to England.

34. This question is of great importance. If India can enter into a successful competition for supplying the United Kingdom with a considerable portion of the raw material which constitutes the basis of her principal manufacture, it will be the means of bringing into cultivation wastes and jungles at present paying no assessment; it will afford additional and permanent employment for the native population, create a medium of remittance from your presidency in lieu of that which it has lost by the cessation of the export to Europe of Surat piece-goods, and will operate to transfer to British ships and seamen a portion of the carrying of cotton, now for the greater part enjoyed by the shipping of other countries.

35. The annual statements circulated amongst the cotton-dealers in London, shew that the quantity of cotton-wool imported into Great Britain in the year 1831, exceeded that of any preceding

preceding year, it being estimated (which the official accounts will hereafter give more correctly) to have amounted to nine hundred thousand packages, equal to two hundred and sixty-two millions of pounds-weight.

36. The importation of the year 1830 was about two hundred and fifty-two millions of pounds, so that the import of the year 1831 has exceeded that of 1830 by ten millions of pounds.

37. The consumption of 1831 has more than kept pace with the imports, the deliveries from the warehouses being computed at two hundred and seventy-five millions of pounds,* including about twenty-three millions, chiefly Indian cotton, exported to Foreign Europe.

38. The prices have, however, been mostly upon the decline throughout the year 1831; and although the stocks of cotton in the hands of the importers are understood to have been much smaller at the close of that year than in any of the ten years preceding, the prices were, and still continue, considerably below those current at the conclusion of the year 1830. The general opinion however is, that some advance may be expected to take place this year.

39. The

* The quantity of cotton consumed in Great Britain, on an average of three years ending 5th January 1830, was two hundred and eighteen millions and a half of pounds. See Parliamentary papers, 17th June 1830.

39. The quantity of East-Indian cotton imported in 1830 was thirty-five thousand bales,* and in 1831 seventy-six thousand five hundred bales;† but about thirty-nine thousand five hundred bales of the latter year's importation have been exported, leaving only thirty-seven thousand bales, or thirteen millions of pounds of Bengal, Madras, and Bombay cotton, for home consumption, which is equal only to a twentieth part of the whole consumption of Great Britain,‡ and evincing the unsuitableness for the British market of Indian cotton of the quality usually imported.

40. It is nevertheless quite manifest, that Indian cotton may be produced of fit quality and condition for the general purposes of the British manufacturers.

41. We have received from Madras in the year 1831 a small parcel of cotton, the produce of Bourbon seed, which has been pronounced to be excellent, and has been consumed at home.

42. The small importation of Broach cotton by the *Elizabeth* has been likewise taken for that purpose; and we are assured there would be found a very large demand for the cotton of Western India,

* About twelve million five hundred thousand pounds.

† About twenty-seven thousand pounds.

‡ Total consumption of 1831 is two hundred and fifty-two million pounds, of which Indian cotton thirteen million pounds.

India, provided it were equal to that per *Elizabeth*, or to the parcel of seventeen bales furnished by Mr. Pelly per *Earl of Eldon*, both of which are of native seed cleaned in the manner of that country, but with much care.

43. There is, however, another difficulty to be surmounted, or the important object under consideration cannot be attained, namely, a reduction of the high price at which your cotton is invoiced.

44. In forming any prospective calculation, it would be unsafe to assume the obtaining a higher price at our sales for a large importation of Indian cotton, although it were of improved quality, than five-pence per pound, but we believe that average may be depended upon.

45. If it be assumed that cotton shall be imported from Bombay at a freight of £9 per ton,* and that it produce five-pence per pound at the sales, and if three per cent. for sea insurance be added to the invoice cost, and two per cent. for charges in England deducted from the sale amount, the cost and charges on board ship at Bombay, to effect a remittance to London of one shilling and ten-pence per rupee, must not exceed one hundred and fifteen rupees per Surat Candy, exclusive of sea insurance.

46. We

* Say a ton of one thousand three hundred and eighty pounds of cotton packed in fifty feet.

46. We take the freight of £9 per ton, because if many ships of a proper burthen for an Indian voyage be required, they would probably not be obtainable on lower terms; but if freight could be had at £8 per ton, the remittance would be one shilling and eleven-pence per rupee; and if at £7 per ton, it would be two shillings per rupee.

47. The invoice price of the superior kind of Surat cotton, provided in pursuance of our order of the 3d June 1829 and shipped per *Elizabeth*, was one hundred and thirty-eight rupees per candy, and the parcel provided by Mr. Pelly and shipped per *Earl of Eldon* appears to have cost one hundred and twenty-seven rupees per candy; but the general price of your cotton has been about one hundred and forty rupees per candy, varying with the abundance of the crops.

48. In your letter of the 23d July 1828, Revenue department, you submitted to us propositions for increasing the growth of cotton and for reducing its price; and in our reply to that letter, under date the 16th July 1830, you have been informed that we did not approve of the granting a bounty upon cotton exported to the United Kingdom, but it was our opinion that land appropriated to the growth of cotton, sugar, and all other crops of a peculiar nature, should not be subject to a higher assessment than lands of the same quality under ordinary crops, and that when such land is subject to a higher assessment it should be reduced to

that

that precise limit. We also stated, that we should not object to affording relief from the transit duties and sea customs.

49. Your Revenue letter of the 18th May 1831 acquaints us, that the subject was under your consideration and a communication would be made to us thereupon.

50. We shall be enabled, upon the receipt of that communication, to give more definite instructions in this department respecting a regular investment of cotton for transmission to England. In the mean time we deem it expedient to direct, that if the result of the measures you may have adopted shall cause such a reduction in the price of cotton that it can be invoiced at 115 rupees per Surat candy, you will direct the Commercial Resident at the northern factories to provide three or four thousand bales of the best thomil cotton of the crop of 1832-3, which you will consign to London upon private ships, if freight be obtainable at the rates, not upon any account exceeding £9 sterling per ton, contemplated in a preceding paragraph. If such freight be not obtainable, you will send five hundred bales of this cotton to England upon the best terms you may be able, and the remainder of it to China.

51. We find by a minute of Lord Clare in May 1831, and your letter to the Collector of Surat of the 5th of that month, that you had authorized the Superintendent of the experimental farm at Broach

to

to cultivate with cotton as much of the land as he could in the season 1831-2, at the same time calling upon him to state fully what measures he would recommend for the attainment of the objects which Government have in view, the producing at the least possible expense improved specimens of cotton of various kinds, and the inducing others to follow the example which the experimental farm will set them.

52. As the farm will have been extended to three thousand begahs, you must, of course, have received in the early months of the present year some quantities of the different kinds of cotton grown there, and it is our wish that such cotton, as also the cotton that may be grown at any subsidiary experimental farms in other districts, be sent to England with the necessary papers of explanation.

No. 84.

MINUTE *by the Right Honourable the Governor of Bombay, dated the* 11*th May* 1832.

A considerable quantity of cotton having now been obtained from the experimental farm in Guzerat, it becomes desirable to dispose of it in the manner best calculated to attract public attention to the superiority which I am sure it will be found to possess, in point of purity and fineness, over the cotton

cotton commonly imported from the northward, which is generally so deficient in those qualities.

With this view, I would beg to propose that the Warehouse-keeper be directed to set aside about a fourth of the cotton received from the farm, for the purpose of being forwarded by an early opportunity to the Honourable Court, and that the remainder be put up to public sale (due notice being given in the Government Gazette) and disposed of, at whatever price may be offered for it. By this plan the Honourable Court will be able to judge of the cotton from the actual inspection and reports of their own agents, while by disposing of the remainder in the manner proposed, we shall have the double advantage of ascertaining its value in this commercial emporium, and of learning from different quarters the opinion formed of it in England, for I have no doubt its superior quality will ensure its transmission to Europe by merchants who will readily inform Government of the prices it will there realize.

Further Minute by the Right Honourable the Governor.

Since writing the above, I have ascertained that the quantity of cotton received from the farm is fifty-seven bales, all cleaned by the saw-gin. The fact that it has been so cleaned should be stated in the advertisement. In addition to the quantity which I have proposed to send to the Honourable Court, I think it would be desirable to retain about six bales to be consigned to the Supracargoes at Canton. It will be interesting to have the estimation in which this cotton is held by the Chinese.

No. 85.

EXTRACT LETTER *from the Governor in Council, Madras, to the Court of Directors, dated the* 15*th May* 1832.

Par. 29. In our dispatch dated 16th October 1829, we informed your Honourable Court, that we had accepted a tender by Mr. Fischer to supply two hundred candies of Bourbon seed cotton at the rate of one hundred and fifteen rupees the candy. On making that tender, Mr. Fischer proposed. in the event of the contract being continued for

for three years, that the price should be one hundred and twelve rupees per candy the second year, and one hundred and ten rupees per candy the third year. Under the circumstances stated in the letter noted in the margin,* we were induced to extend the contract with Mr. Fischer, the cotton for the year 1831 to be provided at the rate of one hundred and fifteen rupees per candy, and that for the third year at one hundred and ten rupees per candy. Mr. Fischer has entered into a new contract, and executed a new indemnity bond, for the usual advance which has been made to him.

30. With reference to paragraph 20 of our letter in this department, dated the 27th May 1831, No. 7, we have the honour to state, that we authorized the issue to different individuals who applied for them of portions of the cotton and tobacco-seeds which remained after the distribution to Collectors therein reported, and have also authorized the Deputy Export Warehouse-keeper to write off to profit and loss the amount value and charges of the whole quantity distributed. We have directed the Deputy Export Warehouse-keeper to call upon Mr. Heath to pay the value of the saw-gin, which from the papers transmitted with the letter before referred to, your Honourable Court will have observed was made over to him.

* 20 September 1830.

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* 20 September 1830.

No. 86.

EXTRACT LETTER *from the Governor in Council at Bombay to the Court of Directors, dated the* 19*th June* 1832.

Par. 1. We have consigned to England, on the private ship *Protector*, nineteen bales of cotton, prepared at the experimental farm in Guzerat by means of the saw-gin.

2. With the view of ascertaining the degree of estimation in which cotton from the experimental farm is held by the Bombay merchants, we caused it to be publicly notified that forty-nine bales of such cotton, which had been cleaned by the saw-gin, would be put up to auction and sold without reserve.

3. The result of the sale, which took place on the 8th instant, is as follows: *viz.*

First	Lot,	10 bales, realized Rs.	156	per Surat candy.
Second	do.	10	152	do.
Third	do.	10	156	do.
Fourth	do.	10	156	do.
Fifth	do.	9	153	do.

4. It is our intention to send six bales of the same cotton to Canton on one of the ships of the season, in order that the opinion of the Chinese merchants upon it may be obtained.

No. 87.

Extract Letter *from C. W. Truscott, Esq. Acting Resident at Etawah and Calpee, to the Board of Trade, Calcutta, dated the 20th June* 1832.

Soon after I had dispatched my letter of the 29th October last, I had a driving-wheel, four feet five inches in diameter, set up in the factory, and having ascertained by repeated trials that it required eight men to give it the necessary velocity, besides one man to feed the machine, I commenced a course of experiments on well-picked *kupas* with the saw-gin, as well as the double and single-handled Hindoostanee *churka*, the results of which I now proceed to detail.

1st. From the annexed statement No. 1, it appears that, including 2 seers 8 chattaks of foul cotton, the above number of men separated, in an average day's work, less cotton than an equal number of men employed on nine single-handled churkas, and a trifle more than the same number employed on four-and-a-half double-handled churka; but that, exclusive of the foul cotton, it yielded much less than the former, and $1\frac{1}{2}$ chattaks more than the latter.

2nd. The saw-gin does not separate the cotton from the seed so effectually as either of the churkas. Thus Statement No. 2 shows that it leaves 66 per cent.

cent. of seed, whilst the single-handled churka leaves only 61⅔, and the double-handled 61⅓ per cent.

3rd. Those who work at either kind of churka are paid *tucka* at the rate of one Bombay rupee for every thirty seers of clean cotton. The classes employed at the saw-gin were paid by daily hire, at the rate of six pice balashoy each man. From the above data I have prepared Statement No. 3, whence it appears that the cotton obtained from the saw-gin cost Bombay rupees 1 10 7½ per maund more than that of the single-handled, and Bombay rupees 1 11 4¾ more than that of the double-handled churka. Unless, therefore, the superior cleanness of the saw-gin cotton will obtain for it a greater price in the London and China markets, it must, in a mercantile point of view, be deemed for the present a decided failure.

4th. On the latter point I must confess, however reluctantly, that I have doubts. Notwithstanding it is so much cleaner, the merchants of this town do not think the saw-gin cotton would fetch a higher price in the Mirzapore market than that separated from the seed by the Hindoostanee churka. A native whom I have employed to spin a small quantity of both kinds, spun a much finer thread from the latter, and informed me that spinning the former was much more laborious, in consequence of the frequent separation of the yarn during the process of spinning. This last-mentioned

tioned defect will naturally render the saw-gin cotton very unpopular among the native spinners, who are not paid by the day but according to the quantity of work executed. Whether similar objections to the use of this kind of cotton will be found to exist in England, where the use of machinery in cotton-spinning is so general, is a point on which I cannot decide with equal confidence. The very extensive use of the bowed Georgias would lead to a favourable conclusion; but in a report on the cottons of America which was sent to India by the Honourable the Court of Directors, and copy of which was forwarded to this office by your Board on the 7th August 1818, the Upland Georgia cotton which had undergone the operation of the saw-gin are described as having a defect, arising from the great velocity with which the saws pass through the breast-plate, which gives the fibre such a warp or bow as it never after recovers: and of the New Orleans cotton, it is remarked, "Though the fibre of this cotton does "not adhere with so great tenacity to the seed as "the bowed Georgias or green-seed, yet the planters, from the extreme tediousness of having "their crop cleaned with rollers, prefer to submit "it to the deteriorating operation of the saw-gin, "by which its quality is so greatly injured, that it "does not bring so much in the English market "by three-pence per pound as it would otherwise, if the cotton was separated from the seed

by

"by the cylinder or roller-gin." These facts certainly lead me to infer, that the action of the saw-gin is detrimental to the staple of cotton, and that the high price of labour in America is the sole cause of its general use in that country.

4th. Such, gentlemen, are the unfavourable results of my experiments, and such the inference which I find it necessary to draw from them. Considering, however, the great importance, both to England and this country, of introducing a more speedy, efficacious, and economical method of separating the cottons of India from the seed and freeing it from other extraneous impurities, I am unwilling to recommend the abandonment of the saw-gin till I have tried the other machine which the Export Warehouse-keeper has been directed to forward to Calpee. The driving apparatus which has been prepared under the scientific superintendence of Captain Forbes, may be found more effective than that which I have set up at the Factory; and if, as stated by Mr. Patrick of Fort Gloucester, in the second paragraph of his letter to the Secretary to the Agricultural and Horticultural Society, under date the 2d November 1831, five men could, with the aid of the saw-gin, separate 144 pounds of clean cotton per diem, the moderate cost of the article might, as in the case of the American cottons, more than cover any loss arising from the deterioration of its staple.

5th. It has occurred to me, that the machines which

which have been lately sent to India are susceptible of considerable improvement. The cotton of these provinces, like the Upland Georgia, is of the green-seed species; but the seeds of the former are so much smaller than those which I have seen of the latter, that large numbers of them are carried with the cotton between the bars of the iron breast-plate through which the circular saws pass, and are deposited with portions of the cotton in the next compartment, where the bars are screwed to the wooden frame-work of the machine. These accumulating in a short time, so clog that part of the breast-plate, that much time is lost in clearing it, and a good deal of cotton which cannot pass through is injured. Should your Board, therefore, deem it advisable that my experiments be repeated at Calpee during the next season, I would suggest that the breast-plate be taken off, and the bars of it beaten broader, so as to leave less space between them.

6th. Whilst the practical utility of the American saw-gin in this country thus remains doubtful, and whilst the cultivators continue the present careless system of allowing a large portion of the kupas to fall on the ground before it is gathered, whereby it becomes mixed with the various foreign substances so detrimental to its sale in the China and London markets, the great desideratum in this Factory is (as observed by your Board in the fifth paragraph of your address to Government of the 25th October last)

last) some machine which would thoroughly clean the cotton, and supersede the present very expensive, but very inefficient mode of hand-picking. With this object in view, I am making up, on a small scale, a machine somewhat similar to one used in England, called a "picker," and described at length in page 379 of Mr. Nicholson's Operative Mechanic. Should it be found on trial to answer the purpose intended, I shall do myself the honour to submit a detailed report on it.

Statement No. 1.

Including 2 seers 8 chattaks of foul Cotton collected under the Gin.

Kind of Machine.	Calpee Weight.			Factory Weight.			Averdupoise Weight.				No. of Machine.	No. of Men.
	Mds.	srs.	cks.	Mds.	srs.	cks.	lbs.	oz.	dr.	dec.		
Saw-gin	0	26	4	0	33	12	62	15	15	997	1	9
Single-handled churka	0	30	7	0	39	3	73	2	5	897	9	9
Double do. ..	0	23	10½	0	30	7	56	13	1	566	4½	9

Exclusive of 2 seers 8 chattaks of foul Cotton.

Kind of Machine.	Mds.	srs.	cks.	Mds.	srs.	cks.	lbs.	oz.	dr.	dec.	No. of Machine.	No. of Men.
Saw-gin	0	23	12	0	30	9	57	0	12	298	1	9
Single-handled churka	0	30	7	0	39	3	73	2	5	897	9	9
Double do. ..	0	23	10½	0	30	7	56	13	1	566	4½	9

Statement No. 2.

Kind of Machine.	No. of Maunds of Kupas cleaned per diem.			Quantity of Cotton obtained.			Per-centage of Cotton.	Per-centage of Seed.	Loss.	Total.	No. of Machine.	No. of Men.
	Mds.	srs.	cks.	Mds.	srs.	cks.						
Saw-gin	2	0	0	0	26	4	32⅔	66	1⅓	100	1	9
Single-handled churka	2	3	11½	0	30	7	3	61⅔	2	100	9	9
Double do. ..	1	23	7	0	23	10½	37	61⅓	1⅔	100	4½	9

Statement

Statement, No. 3.

STATEMENT NO. 3.

1st. *Saw-gin.*

	Rs.	as.	p.	B. Rs.	as.	p.
2 maunds of kupas, at 12 seers per rupee ..				6	10	8
Add expense of nine men, at 6 pice each				1	3	7
				7	14	3
Deduct :						
Value of 12 chattaks of dirty cotton, valued at 9 rupees per maund	0	2	$8\frac{1}{4}$			
Value of 1 sr. 12 cks. of leafy cotton, at 5. 10. per maund	0	3	$11\frac{1}{4}$			
Value of 1. 12. $12\frac{4}{5}$. of Benowlah (seed) at 50 seers per rupee	1	0	11			
				1	7	$6\frac{1}{2}$
Cost of 23 srs. 12 cks. of clean cotton .. By. Rs.				6	6	$8\frac{1}{2}$

or By. Rs. 10. 12. $11\frac{1}{2}$. per maund, Calpee-weight.

2d. *Single-handled chutka.*

	Rs.	as.	p.
Maunds of kupas, 2. 3. $11\frac{1}{2}$, at 12 seers per rupee	6	15	$7\frac{1}{2}$
Add expense of cleaning	1	10	$2\frac{3}{4}$
	8	5	$10\frac{1}{4}$
Deduct :			
Value of maunds 1. 11. 10. of benowlah, at 50 seers per rupee	1	10	6
Cost of 30 srs. 7 cks. of clean cotton .. By. Rs.	6	15	$4\frac{1}{4}$

or By. Rs. 9. 2 4. per maund, Calpee-weight.

3d. *Double*

3d. *Double-handled churka.* Statement, No. 3.

Maunds of kupas, 1. 23. 7., at 12 seers per rupee	5	4	7
Add expense of cleaning	0	12	7¼
	5	17	2¼
Deduct:			
Value of seers 38. 15. of Benowlah, at 50 seers per Balashoy rupee	0	11	2½
Cost of 23srs. 10½cks. of clean cotton .. By. Rs.	5	5	11¾

or By. Rs. 9. 1. 6¾. per maund, Calpee-weight.

(Signed) C. W. TRUSCOTT,
Acting Resident.

No. 88.

EXTRACT LETTER *from the Governor-general in Council, Bengal, to the Court of Directors, dated the 24th July* 1832.

Par. 108. In continuation of paragraph 39 of our letter No. 36 of 1831, dated 25th October, we beg to notice a letter from the Board of Trade, forwarding communications from the officiating Commercial Resident at Calpee and the Secretary to the Agricultural and Horticultural Society, relative to the two American saw-gins for cleaning cotton, received from your Honourable Court in the year 1830. Letter from Bengal, 24 July 1832.

109. The report of the trials with the machine lent to the above-mentioned Society was highly satisfactory, both as to the rapidity and the perfection

Letter from Bengal, 24 July 1832.

fection of its work. We instructed the Board to acquaint the officiating Resident at Calpee, who had hitherto been unable, to work the saw-gin sent to that Residency, with the mode in which the engine was used, and if any part was defective, which could be ascertained by forwarding a plan of a complete machine from the presidency, to have it remedied.

110. We approved of the Board's proposition to make over to the Agricultural and Horticultural Society the three pairs of similar saw-gins that were received in 1831, by the regular ships *Thames* and *Lady Melville,* as soon as they were set up by the Superintendent of Government machinery, and we directed the Board to apprize the Society of this resolution, referring them to Captain Forbes, at the New Mint, who would deliver the machines to their Secretary.

111. We stated to the Board our expectation to learn from time to time, in what way these saw-gins were disposed of, and with what results. We called for a report regarding a cleaning machine, which the Board informed us they had inspected at the Glos'ter cotton-works, of simple construction, which would separate the dirt, leaves, and other impurities from the cotton-wool, and thus supersede the hand-picking.

112. The Board were of opinion, that such an instrument would be essentially serviceable in this country. It might be used, they conceived, under

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skilful superintendence, at the places of depôt to which the cotton is first brought, and they estimated that eighty or one hundred machines of the kind, placed in the Calpee cleaning godowns, would do the work of from fifteen hundred to two thousand persons employed there during the import season, and cause much less injury to the fibre or staple of the cotton than it receives from the present process.

Letter from Bengal, 24 July 1832.

113. The Board afterwards proposed, that of the three saw-gins which it was intended to assign to the Agricultural and Horticultural Society, one might be forwarded for trial to the Calpee factory. In conformity with this suggestion, we desired the Mint Committee to instruct Captain Forbes to set up one of the saw-gins and make it over to the Export Warehouse-keeper for the purpose stated in the Board's letter; the other two to be delivered to the Agricultural and Horticultural Society, as before directed.

No. 89.

EXTRACT LETTER *from H. Chamier, Esq., Chief Secretary to the Madras Government, to the President and Members of the Board of Revenue, dated the* 17*th May* 1833.

Letter from Madras Government to Board of Revenue, 17 May 1833.

You will be pleased to forward, for transmission by the *Sesostris*, to the Court of Directors, copies of

Letter from Madras Government to Board of Revenue, 17 May 1833.

of such of the reports of the Collectors on the result of the experiment tried with the American cotton-seed, as have already been received, and you will instruct the Collectors to continue the experiments where the seed of the present year is available.

No. 90.

EXTRACT LETTER *from H. Lacon, Esq., Principal Collector, Cuddapah, to the Secretary to the Commercial Committee, Fort St. George, dated the 30th March* 1833.

Letter from Collector at Cuddapah, 30 March 1833.

I have the honour to acknowledge the receipt of your letter of the 22d instant, requesting me to furnish the Committee with a small quantity of the produce of cotton which may have been raised from the seed supplied to this district, for the purpose of transmission to the Honourable the Court of Directors.

The first supply of cotton-seed, consisting of one hundred and fifty pounds, was distributed to the several talooks in the months of June and September. The seed not being fresh has not succeeded in any part of the district. I raised for the sake of experiment a few plants in my own garden, which being well watered and attended to, seemed to thrive and were very productive. The pods

pods were large, exceeding in weight three or four times those of the country plants. I have no specimen of the cotton left; but that the Committee may be enabled to form some estimate of its quality, as compared with the country cotton, I beg leave to submit for their inspection two pieces of cloth prepared by the same weaver from each description of cotton. The second supply of seed reached me at an unseasonable period, and cannot be distributed for cultivation till the next rains. The seed appears on trial to be in excellent order.

Letter from Collector at Cuddapah, 30 March 1833.

It is not, however, to be expected, that the American will ever supersede the country cotton, as the latter plants require no watering, and being annual are cultivated in unenclosed fields, chiefly in the rich black soil of the Western talooks. I would rather solicit the attention of the Committee to the encouragement of the country cotton, by holding out sufficient inducements to the ryots to make them careful as to the mode of collecting the *kupas* in the fields.

I beg leave to submit for their consideration, copy of a letter from Mr. Lush, Superintendent of the Botanic Garden at Dhapooree, who at Dharwar has introduced the observance of a few simple rules with such success, as to lead to the appointment of an Agent on the part of the Bombay Government. I was anxious to impress the advantage of the Dharwar system on the ryots of Koil-

gootta,

Letter from Collector at Cuddapah, 30 March 1833.

gootta, the cotton of which talook is considered the best; but unless some clear and distinct profit is held out, I quite despair of success. Nothing can be more injurious to the purity of the article, than the hasty and indifferent manner in which the produce of their fields is now collected; and to shew the extent of improvement which this system might introduce, I beg leave to send specimens of the cotton carefully gathered and cleaned, and of that prepared in the ordinary way.

No. 91.

EXTRACT LETTER *from J. Blackburne, Esq. Collector, Guntoor, to the President and Members of the Board of Revenue, Fort St. George, dated the 16th April,* 1833.

Letter from Collector at Guntoor, 16 April 1833.

In compliance with your instructions under date the 28th ultimo, I have the honour to submit my report upon the cultivation and produce of the American cotton received from the Commercial Department on the 13th May and 18th November 1831.

The seeds were distributed and sown in the best ground of the Guntoor sircar, but in consequence of an incessant fall of rain within a few

few days after the sowing, they came up only in a few places, and what did come up was destroyed by too much water. In the Palamur district some of the seed came up and thrived. The produce was fifty-one seers and a half of Cotton with seed. Of this, eight seers with, and ten seers without seed, were furnished to the Marine Board, 10th July 1832, as specimens.

Letter from Collector at Guntoor, 16 April 1833

Of the produce, deducting the quantity sent to Madras, the remainder was cleared for seed, and amounted to seers twenty-seven three quarters. This seed, as well as that of one hundred and twenty-five pounds of Upland Georgia, and twenty-five pounds of Sea Island Georgia, received from Mr. Brooke, 18th November, 1831, was distributed to be sown in various villages during the current year. In consequence of the failure of seasonable rains from the very beginning, no cultivation took place, with exception of thirty pounds of the Upland Georgia. In the village of Danwamoola, in the Palmaund district, sixty plants only came up, as the ground had not a sufficient moisture; this however thrived, and yielded twelve and one quarter seers of cotton, with seed, which is now in deposit. The other American cotton-seed was not sown, from the above circumstances, in any part of the country.

As the red cotton of this country produces without much pains, the ryots are backward in taking

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Letter from Collector at Guntoor, 16 April 1833.

the measures required to bring the cultivation into an improving state.

Necessary steps were taken in the current, as well as in the last year, by explaining to the ryots that the cotton is white, that the pods grow to a large size, and that their profit would be much increased in consequence of its bearing a higher price than the country cotton, and they were thus recommended to take pains in the cultivation; but unfortunately to no purpose, owing to the incessant rains of the last, and the entire failure of them in the current year. The produce of the country cotton of the year is within one-sixteenth of the usual quantity.

The experiment may therefore be deemed to have entirely failed from adversity of season alone, and that it should be renewed at a more favourable moment.

No. 92.

EXTRACT LETTER *from H. Lacon, Esq., Principal Collector, Cuddapah, to the President and Members of the Board of Revenue, Fort St. George, dated the 16th April* 1833.

With respect to the seed of the American cotton, I beg leave to state that the first supply not being fresh, few plants were reared. The second supply reached me at the most unfavourable period of the year for distribution, and the nature of the present season has been such, as to discourage the project of introducing any new cultivation. In my letter to the Secretary to the Commercial Committee, 30th March 1832, I had occasion to report on the result of the first trial, and I there stated as my opinion, that "it could not be expected that the American would ever supersede the country cotton, as the latter plants require no watering, and being annuals are cultivated in unenclosed fields, chiefly in the rich black soil of the western talooks." I am also inclined to think that the American cotton has a tendency to degenerate in this climate, which defect I have seen noticed as the result in another part of the country where its introduction had been attempted.

Letter from Collector of Cuddapah, 16 April 1833.

Copy of the letter above quoted I herewith enclose; and as your Board may wish to see a specimen of the American cotton, I shall take

Letter from Collector at Cuddapah, 16 April 1833.

the opportunity of forwarding a small packet of the same grown in my garden at Muddenapully.

No. 93.

EXTRACT LETTER *from J. Dent, Principal Collector, Southern division of Arcot, to the President and Members of the Board of Revenue, Fort St. George, dated the 7th May* 1833.

Letter from Collector of S. Arcot, 7 May 1833.

I have the honour to acknowledge the receipt of your Secretary's letter of the 28th March last, calling upon me for a special report of the result of the experiments tried with the American cotton-seed received from the Deputy Export Warehousekeeper, in November 1831, and to state my opinion of the quality of the produce.

The cotton-seed was distributed among the different talooks most favourable for the production of cotton; but whether owing to the peculiarity of the season, to the soil not being congenial to this species of cotton, or to the badness of the seed, the experiment may be said to have almost entirely failed. In some talooks the seed never came up, in others it perished before it came to maturity, and where it yielded produce it was so scanty as scarcely to afford data sufficient to form a fair estimate of its quality. I sent a small parcel, produced in my own garden and cleaned with

with great care, to the Spinning establishment at Pondicherry, and it was pronounced to be very good. Letter from Collector of S. Arçot, 7 May 1833.

The cotton crop in the current year has almost entirely failed in every talook.

No. 94.

Extract Letter *from John Orr, Esq. Principal Collector, Salem, to the President and Members of the Board of Revenue, Fort St. George, dated the 8th May,* 1833.

With reference to your letter of the 28th March last, I have the honour to acquaint you that the American cotton-seed received in December 1831 was distributed to the talooks noted in the margin,* with strict orders to the Tahsildars to give it to such individuals only as would take the greatest care of it, and to have it sown in the most favourable soils. I regret, however, to find that it is reported to have very generally failed. This is chiefly attributed to the want of seasonable rain in last year, which very materially affected all the cotton crops. A little seed has been obtained, however, in some talooks, which will be again sown Letter from the Collector at Salem, 8 May 1833.

* Ossoor, Denkeneettah, Durhampoory, Kistnagherry, Abtoor, and Raizepoor.

Letter from the Collector at Salem, 8 May 1833.

sown and the result communicated. When the seed was received from Madras, Mr. Gardiner, then in charge of the district, gave a portion of it to Mr. Fischer, who pays much attention to the culture of cotton in the southern parts of the district; and that gentleman, in a communication I lately received from him, states that he considers the plant "a delicate and unprofitable one, and "not at all calculated for this country;" for, he observes, "independent of the climate being against it, it requires too much care and trouble in its successful cultivation for native indolence; and that it is not near so productive as the common country or indigenous cotton, and by no means so much so as the Bourbon." The American cotton is certainly finer and more valuable than the indigenous cotton, but the Bourbon, in my humble opinion, is again as superior to the American. When the American of the denomination sent out to this country was selling in England for sevenpence the pound, the Coimbatore sold for fourpence halfpenny and fivepence, and my Bourbon for ninepence.

The cotton crops in all the talooks are reported to have been in last year a complete failure, and that no where has the produce been more than enough for home consumption.

No.

No. 95.

LETTER *from J. S. Thomas, Esq. Acting Principal Collector, Coimbatore, to the Secretary to the Commercial Committee, Fort St. George, dated the 4th August* 1832.

SIR:

I have the honour to forward a small quantity of cotton, the produce of the seeds received from Madras. I beg to inform you, that the produce was generally deficient in the last year, and that in every village the seeds did not come up, owing to the country suffering severely from drought. Letter from Collector at Coimbatore, 4 Aug. 1832.

No. 96.

EXTRACT LETTER *from W. Mason, Esq. Collector in Guntoor, to the President and Members of the Commercial Committee, Fort St. George, 11th August* 1832,

I have the honour to submit my report upon the cultivation and produce of the American cotton-seed

Letter from Collector in Guntoor, 11 Aug. 1832.

seed received from the Commercial Superintendent.

In order to put the Committee in possession of the fullest particulars relative to the experiment made with these seeds, I have enclosed an account of all the particulars which the Collectors were ordered to report; by a reference to which it will be observed, that none of the cotton-seeds planted in the low country in the Guntoor circar came to perfection, few of them having even come up.

In the Palmaund district, although planted later in the year than is usual, there was every prospect of a fair crop; but our hopes were disappointed in consequence of an untimely heavy fall of rain in the month of February, when the pods were either burst or on the point of bursting. In the inspection I made personally of several fields planted with the cotton, I was particularly struck with the great ravages which the insects had made upon the leaves and flowers of these plants after they had come to their full growth, whilst those of the country cotton in the adjoining fields were left untouched. Whether this arose from the soil being badly prepared for their reception, or from this particular plant being more susceptible of attacks of this nature, I had not the means of ascertaining. The native farmers considered both the plant and its produce infinitely superior to that commonly grown in the Palmaund country.

The

The seeds were intrusted to the best farmers and sown in the best ground, and I mainly attribute their scanty produce to their being sown nearly a month later than the usual period. Should the present prove a favourable season I trust the result will be more satisfactory.

Letter from Collector in Guntoor, 11 Aug. 1832.

STATEMENT *shewing the Quantity of American*

of Guntoor and the

		Names of the Villages.	Names of the Individuals.	Quantity of Seeds delivered to each Individual.	
	1.	2.	3.	4.	
Guntoor Circar.	1.	*Rajapellah Tanah.*		Mds.	srs.
		Vunglepooriem .. Vuntoo ..	C. Boochara and G. Lashoo	0	5
		Armanarum ..	C.Veerena&G.Choudry	0	5
		Jalaulpooram ..	C. Chinna Parapah ..	0	4
		Paracherloh ..	M. Kishmanah ..	0	3
		Undtlamann ..	V. Lutchmanuh ..	0	3
		Janamadalah ..	M. Boochiah P. Nangoola, &c. ..	0	10
		Suntarawoor ..	Curnums & villagers	0	10
	2.	*Chaybrote Tanah.*			
		Caudumrauzepollan	D. Ranninapah ..	0	20
		Royupoody ..	C. Paupiah	0	10
		Peddamuddoor ..	Villagers	0	10
	3.	*Rapully District.*			
		Batapoody	Curnums & caupoors	0	11¼
		Bundaurpullay .. Byanarum	do.	0	15
		Nalapaud	do.	0	10
	4.	*Datchapully Tanah.*			
		Maudenapaud ..	V. Nursimloo & B. Sashoo	1	0
Palmaund District.	5.	*Temmerecottah Tanah.*			
		Temmerecottah ..	J. Saupiah	0	30
		Trepoorasoonda .. Repoorum Agraharum	V. Saumbiah ..	1	0
		Daurnamoola , ..	C. Secturamdoo ..	0	10
				5	36¼

REMARKS:

No. 1.—In consequence of the heavy rains a few days after the seeds were sown some did not come up, and those which came up perished.

No. 2.—Perished, in consequence of the ground in which the seeds were planted having been flooded after they had sprouted.

Geddamuddor did not come up.

No. 3.—*Vide* Remarks, No. 1.

Cotton-seed sown in different Villages in the Zillah District of Palmaund.

Description of Land in which Seeds were Sown.	Time at which Seeds were sown.	Time of produce.	Quantity produced.	Price of Cotton per Candy.
5.	6.	7.	8.	9.
			Maunds.	M R. as. p.
Nulla Ragoda or Black Soil.	10 Oct. 1831	—	—	—
do. ..	do.	—	—	—
Ragada ..	20 do.	—	—	—
do. ..	do.	—	—	—
do. ..	do.	—	—	—
do. ..	10 Nov.	—	—	—
do. ..	—	—	—	—
Good Ragada	11 Oct.	—	—	—
do. ..	1 Nov.	—	—	—
do. ...	do.	—	—	—
Nulla Ragada	Nov. —	—	—	—
do. ..	do.	—	—	—
do. ..	do.	—	—	—
Maga Ragada	10 Sept. —	Up to the end of March 1832,	8½	15. 0. 0.
Nulla Ragada	17 Sept. —	Up to the end of Feb. 1832,	3¼	—
do. ..	9 Oct. —	Up to the 10th March 1832,	20	—
do. ..	18 Sept. —	do.	19¾	—
			1 11½	

REMARKS:

No. 4. After growing one or three-quarters of a yard high, some plants were destroyed by insects at the time of harvest: the leaves, flowers, seeds, &c. of others rotted; but a quantity of eight and a-half seers of cotton was nevertheless produced.

No. 5.—These seeds reached the district almost too late in the year to have a fair trial, and the young plants were much injured by the heavy rains which fell in February, when the pods had nearly burst.

Guntoor, 11th August 1832. (Signed) Wm. Mason, Collector.

No. 97.

Extract Letter *from the Governor in Council at Bombay to the Court of Directors, dated the 5th October* 1833.

Par. 1. With reference to the fourteenth paragraph of our letter dated the 6th June last in the Commercial Department, we now proceed to inform your Honourable Court of the measures which have been adopted since our last report, on the subject in connection with the cotton experimental farms in Guzerat and the southern Mahratta country.

2. The Superintendent of the farm in Guzerat having been authorized, on the 5th May 1831, to cultivate cotton on the farm at Dauda to the greatest possible extent, and to state what measures he would recommend to be adopted for the attainment of the objects which Government had in view (*viz*. those of producing on the farm, at the least possible expense, improved specimens of cotton of various kinds, and of inducing the cultivators of the country to follow the example which would thus be set), that officer stated his opinion, that these objects might be speedily obtained, could the native farmers be prevailed on to cultivate parts of the experimental farm by contract under his directions, by which means they might gradually be led to introduce into their own farms

any

any alterations that might appear to them to be likely to be profitable.

3. At the same time Mr. Martin stated, that from what he had seen of the cultivation of the cotton-plant, in which so much depended upon the season and so little upon the skill of the cultivator, it appeared to him that more improvement might be looked for from a better mode of gathering the kupas than from any alteration that would be introduced in the cultivation. As all the Broach cotton sold for nearly the same price, the cultivators would not (Mr. Martin added) take the trouble to pick it carefully; but this difficulty might, he conceived, be obviated, by Government taking at a certain rate a quantity of well-cleaned kupas from each village, care being taken that it be of good quality, and by making a trifling present to those villages in which kupas of a superior description was produced.

4. The Superintendent was accordingly authorized, on the 4th July following, to let out to native farmers portions of the experimental farm, to be cultivated by contract under his own directions, as he had proposed; but in respect to his suggestion for purchasing kupas from villages, it was deemed expedient to make a reference to the acting Commercial Resident (Mr. Pelly), who was required, if he approved of the plan, to state the manner in which it should be brought into practical operation.

From

no improvement was to be expected from any alteration in the mode of cultivating cotton in Guzerat. The implements used were extremely well adapted to the purpose, and the small quantity of land cultivated by each individual cultivator, enabled him to bestow upon it more care and attention than could possibly be expected from hired servants, such as those employed on the Government farm.

8. Mr. Martin was also of opinion, that a decided improvement might take place, if when the cotton crop became fit for gathering, more attention was bestowed upon that operation; and from a firm conviction that the quality of the staple might be essentially improved, and perhaps even enabled to compete with the New Orleans in the English market, he submitted to the Board the three following propositions, and stated that, if they were acceded to, the expense of his establishment would be defrayed by the farm itself.

> First. That he might be allowed to let 2,800 begahs of the farm at Dauda at the same rate of assessment as that levied on the surrounding land, the rent being paid for in kupas of the finest quality, the land being cultivated under his own directions, and the kupas cleared from seed by the saw-gin.
>
> Second. That the remaining two hundred begahs

begahs of the farm should be cultivated entirely by himself with foreign seed, in order that the plant which might prove best adapted to the soil and climate might be gradually introduced throughout the country.

Third. That he might be permitted to purchase small quantities of kupas from various parts of Guzerat of the finest quality, to an extent not exceeding ten thousand rupees, to be cleaned by the saw-gin.

9. Acquiescing in Mr. Martin's suggestions, we authorized him to carry them into effect, and we at the same time determined, that the cotton which he might in consequence obtain should form a part of the China investment.

10. In conformity with these instructions, Mr. Martin rented two thousand begahs of the farm, from the 1st May 1832, to persons who had engaged to reside upon it, to whom we permitted him to make small advances, not exceeding in the aggregate eight hundred rupees, to enable them to erect dwellings, the amount to be repaid from the produce of the first year's crop. We also sanctioned the construction of warehouses upon the farm, which Mr. Martin reported to be necessary, at an expense of eight hundred and fifty rupees, and have reduced his establishment to one hundred and thirty-two rupees per mensem (inclu-

Letter from Bombay, 5 Oct. 1833.

sive of, all contingent expenses), which he states will be quite sufficient to carry on the duties of the farm. The establishment was still further reduced under an arrangement subsequently made by the Superintendent with the ryots, to furnish labour of every description, on condition that, for every begah so cultivated, they were to be allowed to hold an equal quantity of land free of rent.

11. As the Superintendent was often obliged to leave the farm at Danda, from which he would be so still more frequently when engaged in carrying into execution the plan of purchasing kupas from the ryots, and as his absence, even for a day, was attended with much inconvenience, in consequence of there being no competent person to take charge on such occasions, it was considered necessary that he should have an assistant; more especially as the unhealthy climate of Guzerat rendered it imprudent to hazard the success of the establishment on the life of a single individual. Mr. Allen was accordingly appointed an Assistant to the Superintendent, on a salary of one hundred rupees per mensem, with batta at the rate of one rupee per diem when employed beyond the farm, and four hundred rupees were granted to enable him to defray the expenses of his journey.

12. Considering it advisable that there should be subsidiary farms in different parts of the country, we authorized the Superintendent, in May 1831, to establish one on the western side of the

Letter from Bombay, 5 Oct. 1833.

the gulph of Cambay; but owing to the lateness of the season, he was able to make arrangements for cultivating only ten begahs of land in that quarter with cotton-seed. In February last, however, he fixed upon two spots, one near Dundooka and the other near Ranpore, for the formation of the farms on which he proposed to plant the seed of the Egyptian and Pernambuco cottons, which were to be cultivated by the ryots at certain rate per begah.

13. Besides these subsidiary farms, another has been established near the villages of Ochallee and Uwadur in the Broach district. The land selected for the site of this farm, which is about five hundred begahs in extent, is most advantageously situated about six miles to the south of Broach, being bounded on one side by a small river, and on the other by the Rajpeerla districts. A very moderate rent per begah is to be charged to the cultivators, who on their part engage to cultivate cotton in the manner directed by the Superintendent. The only immediate expense incurred has been about four hundred rupees, on account of sheds for the accommodation of the cattle, and a sum of two thousand and five hundred rupees, to which extent the Superintendent has been authorized to make advances to the cultivators.

14. In the southern Mahratta country, the measures adopted by Government to effect improvement in the quality of cotton produced

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Letter from Bombay. 5 Oct. 1833.

in that province, have been confined more to the introduction of improved modes of gathering the kupas, than to the establishment of farms for the practical introduction of novel plans of cultivation.

15. Doctor Lush, Superintendent of the botanical experiments at Dapooree, who was selected to superintend the arrangements in the southern Mahratta country, reported, shortly after his arrival at Dharwar, that the cotton cultivated in that province was capable of maintaining a respectable footing, if properly cleaned, and that improvements in its quality would be best effected by introducing a better method of picking and cleaning the staple, in such manner as to increase its value in the market, without adding much to the cost of production; by distributing seeds of the best description to the ryots to cultivate on their own account, and by establishing a system of reward for the finest specimens of cotton produced.

16. Accordingly that gentleman's attention was first directed to the mode of gathering, and finding that, to the careless manner in which this process was executed the impure state of the cotton was solely to be ascribed, he proposed, as a means of remedying the evil, that Government should encourage clean and careful picking, by purchasing from the cultivators at a premium cotton gathered according to the following plan:—Each picker to be provided with two bags, one of hemp being appropriated for the cotton which was quite free from

from leaf and dirt, and the other of dungaree for that which was not perfectly clean. The cotton so gathered, instead of being left all night in the field, as was the practice, to be taken in large bags to the villages, and housed at the close of each day, the seed being afterwards separated from the fibre by foot-rollers worked by women, and if necessary, again hand-picked before the final packing. Letter from Bombay, 5 Oct. 1833.

17. This plan of gathering the cotton is similar to that which, it is believed, obtains in America, where the cotton is separated into two classes of different qualities at the time of gathering. The six bales of cotton which were forwarded to your Honourable Court in 1831, and of which the London merchants appear to have had a favourable opinion, as stated in the twenty-second paragraph of your Commercial letter dated 6th March 1832, were prepared according to this plan, as was also a small quantity of Dharwar cotton consigned last year to Canton, which was highly approved of by the Chinese merchants. The Select Committee stated, that a small consignment yearly of such cotton would not fail to prove of easy sale and ready consumption in China.

18. But notwithstanding the advantage of this plan to the cultivators, who had the option allowed them of paying their revenue in cotton, or of receiving a fair remunerating price (about twenty per cent. above the market price) for the quantity

Letter from Bombay, 5 Oct. 1833.

quantity sold to Government, it has not been attended with that success which might have been expected. This failure is in some degree attributable to the influence of the principal merchants of Dharwar, with whom it was at first proposed to contract for the supply of cotton cleaned on the new plan, and whose refusal to co-operate in what they conceived to be innovations on established usages and customs, rendered it necessary for Dr. Lush to make his bargains with the cultivators themselves. So much difficulty was experienced by that gentleman in inducing the ryots to follow our system, that in 1831 he could succeed in obtaining only a small quantity of clean-picked cotton.

19. It was evident, therefore, that a considerable time must elapse before a sufficient quantity of the Dharwar cotton could be brought into the market, so as to establish its character and to effect a decided improvement in the trade. Notwithstanding the steps taken by Government to effect improvement in this valuable article of commerce, the local dealers have evinced no disposition to assist in the attainment of this object; nor does it seem that the Bombay merchants have abandoned the prejudices which they have always entertained against the cotton of the southern Mahratta country.

20. Under these circumstances, it was considered advisable to establish an agency in the districts

districts to the eastward of Dharwar, in order to afford those ryots who might adopt our plan of gathering and cleaning cotton an opportunity to dispose of their produce at fair prices; by which means it was hoped that the character of the cotton would in time be so firmly established, as to render further purchases or interference on the part of Government quite unnecessary. As other duties would fully occupy Dr. Lush's attention, the agency was placed, with a fixed establishment of fifty-three rupees per mensem, under charge of Mr. James, who was allowed a salary of one hundred rupees per mensem, with a commission of three per cent. on his purchases (two hundred rupees being the maximum, and one hundred and fifty the minimum of his monthly receipts), and batta at the rate of two rupees per diem when trading. Letter from Bombay, 5 Oct. 1833.

21. The objections which exist against Dharwar cotton may, in a great measure, be attributed to the impure state in which it arrives at the presidency, and which is owing principally to the manner in which it is packed and conveyed. It is thrown loose into bags, and being carried on bullocks which require to be daily laden and unladen, the cotton is necessarily subjected to a constant accumulation of dirt and dust. This is again increased by the process of repacking which it undergoes after arrival in Bombay. To remedy this very great disadvantage, we resolved to endeavour to introduce

Letter from Bombay, 5 Oct. 1833.

introduce the system of repacking and screwing the cotton in the principal villages in which it is produced; and for this purpose we caused three repacking-screws (the box being made to contain five Dharwár maunds of cotton) to be erected at Dharwar, Nowlgoond, and Gudduck, which were considered by Dr. Lush to be the places best situated for the purpose.

22. We have sanctioned an outlay of six thousand two hundred and ninety-six rupees, for putting up these screws and constructing proper sheds for their reception; and we are hopeful that the benefit to be derived from the employment of them will be so apparent to the dealers, as to induce them to erect others on their account, and, perhaps, even to purchase those belonging to Government.

23. For some time after his arrival in the southern Mahrätta country, Dr. Lush had been examining the western districts, with the view of selecting a site for the establishment of a small perennial cotton-farm, and he at last chose a spot of land (about one hundred and eight begahs in extent) in the village of Seegeehulee in the Bedee talook. This spot is most advantageously situated, as the greatest portion of the land is capable of being irrigated from a stream which never fails, while the soil of the surrounding fields is well adapted to the culture of the cotton-plant, in case an extension of the farm should be deemed desirable.

24. A

Letter from Bombay, 5 Oct. 1833.

24. As Dr. Lush found on experiment, that the perennial cottons grow very well without irrigation, he recommended that the sphere of his operations should be extended, and another farm established on the cotton lands to the eastward of Dharwar. This recommendation was not acceded to, as we considered that it would be best to await the result of the measures already in progress, before sanctioning the adoption of further arrangements which would be attended with considerable expense.

25. Since the establishment of the farm at Seegeehulee the seasons have not been favourable to the growth of cotton, and the greater portion of the seeds sown produced no crop whatever. The soil appears best adapted to the culture of the white-seeded perennial, the Pernambuco, and the Egyptian cotton, which last promises to succeed far better than the others. The produce of the last harvest, together with that of the experimental farms in Guzerat, was forwarded lately to England in the *Lady Feversham*, in conformity to your Honourable Court's orders in the fiftieth paragraph of your Commercial letter, dated the 2d March 1832. The cotton purchased last year by Dr. Lush from the ryots has been consigned to China.

27. We beg to draw your attention to our proceedings, upon a proposition from the sub-Collector of

Letter from Bombay, 5 Oct. 1833.

of Dharwar to be allowed to make arrangements with the patels of villages where good cotton is produced, to supply that article properly cleaned and picked, to the value of twelve thousand rupees per annum, in part payment of their revenue. Sir R. Arbuthnot's plan appeared to us unobjectionable, and we authorized its adoption, but with this modification, that the ryots were to have the option of paying their revenue either in cotton or in money. At the same time we sanctioned the appropriation of a few acres of land for the experimental cultivation of various sorts of cotton-seed, but limited the expenditure on this account to one thousand and two hundred rupees per annum.

28. As the cotton supplied by Buswunt Sing of Ahmednuggur is considered to be of good quality by the London merchants, and is held in great estimation in China, so much so indeed as to induce the Supra-cargoes to write for a greater supply this season, we have authorized the Collector to avail himself of every opportunity, during the time he is making the jummabundy settlements, to encourage the ryots to engage in the cultivation of cotton, and to enter into contracts with individuals for small quantities not exceeding fifty bales.

29. We have already advised your Honourable Court of the terms on which advances of cash have been

been made to Buswunt Sing, Pandoorung Succaram, and Balcrustna Dewarkur. Buswunt Sing has been very punctual to his engagement, and the cotton supplied by him this season has been sent to China, but the other two speculators have not yet commenced their deliveries. This is, however, sufficiently accounted for by the unfavourableness of the last season, and in some measure, perhaps, by their being as yet inexperienced agriculturists. Letter from Bombay, 5 Oct. 1833.

30. The attention of the Collector of Candeish having been directed to the object of encouraging the cultivation of superior products in his Collectorate, he made arrangements in 1831, with our sanction, for the purchase of cotton to the extent of twenty thousand rupees. His consignments last year having become damaged on the road, were disposed of at the presidency by public auction; but those of this season arrived safe, and as the cotton was pronounced by a Committee of Native Merchants to be marketable, it has been forwarded to China as a part of the investment.

31. With reference to the tenth paragraph of our letter in the Commercial department, dated the 6th June last, we have the honour to draw your Honourable Court's attention to reports of the result of the experiments which have been made, to ascertain whether the fibre of Indian cotton is sufficiently tenacious to resist the cutting action of Whitney's saw-gin. These experiments prove

Letter from Bombay, 5 Oct. 1833.

prove, that the fibre is very much injured by the process of cleaning by means of this machine; so much so, indeed, that by the last advices received from the Supra-cargoes at Canton, it appears that cotton so cleaned is quite unfit for the process of manipulation which it always undergoes in China, and that if the quantity sent last year to Canton had been separated from the rest of the investment it would have been quite unsaleable.

32. Whether this result is owing to the method of working the machine, or to the weakness of the fibre of the cotton, has not been clearly established, though the Superintendent of the experimental farm inclines to be of the former opinion; but to whatever cause attributable, we fear that it will be useless to continue to employ the saw-gin, as the advantage of having the staple well cleaned is, we think, much more than counterbalanced by the injury which its fibre suffers during the process.

33. We consider, however, that it would be satisfactory to remove the doubts which are still entertained on the subject of Whitney's machine, and we therefore request that your Honourable Court will have the goodness to favour us with a detailed account of the mode of working it in America, in order that it may be compared with the method pursued in India.

34. As it was supposed that the defects of this machine

machine were in a great measure owing to the application of manual labour, we resolved upon adopting the plan of working it with bullocks, by means of machinery adapted to the purpose. This plan has not, however, been acted upon, in consequence, we regret to state, of the destruction by fire, in March last, of the whole of the saw-gins, and a considerable quantity of cotton-seed, and other stock, at the farm at Danda. The warehouse in which the gins were deposited was destroyed at the same time, and as it was erected at the cost of one thousand seven hundred rupees, for the accommodation of the Government, by a private individual, who had agreed to let it for twelve rupees per mensem, we have granted him the sum of five hundred rupees as compensation for his loss. Letter from Bombay, 5 Oct. 1833.

35. We have the honour to forward a small box, containing the specimens of cotton cleaned by the saw-gin, which were submitted to the examination of the native merchants at this place.

No. 98.

EXTRACT LETTER *from the Governor in Council at Bombay to the Court of Directors, dated the* 15*th of February* 1834.

Par. 1. We have the honour to acquaint your Honourable Court, that we have consigned to England Letter from Bombay, 15 Feb. 1834.

Letter from Bombay, 18 Feb. 1834.

England on the *Lady Nugent*, Lucas Percival, Commander, one bale of white-seeded perennial cotton, and one bale of American Upland (grown as perennial), the produce of the perennial farm at Seegeehulee, in the southern Mahratta country.

2. Our object in sending the white-seeded perennial, which is a new description of cotton, is, that your Honourable Court may ascertain the opinion of the merchants in London as to its quality, and the sort of manufacture for which it may be best adapted. The merchants of Bombay are of opinion, as your Honourable Court will observe from the accompanying letter to the address of our Warehouse-keeper, that the cotton is of a superior quality, that the staple is good, and that it is worth about one hundred and eighty rupees per Surat candy.

To James Taylor, Esq., Warehouse-keeper.

SIR:

In compliance with your request, we have examined the samples of cotton shown to us from Dharwar, *viz.* the American Upland and white-seeded, and beg leave to state our opinion, that the cotton is of superior quality, the staple good and worth about one hundred and eighty rupees

per

per Surat candy, and well deserving of being sent to England. Letter, 30 Jan. 1834.

We have the honour to be, Sir,
Your most obedient humble servants,
(Signed) HORMUZJEE DORABJEE.
JAHANGHEIR NASSERWANJEE.
Bombay, JEEJEEBHOY DADABHOY.
30th January, 1834.

True copy:
(Signed) L. R. REID,
Secretary to Government.

No. 99.

REPORT *on some small Samples of Cotton from Madras, dated East-India House, May* 1834. Report on Samples of Cotton from India, May 1834.

Per ship Lord William Bentinck.

	QUALITY.
1 Box. 2 lb. American cotton, produced in the southern division of Arcot.	Good, fair, clean cotton. Part of it has staple of good length, but there is a great mixture of short fibre. A little stained. Estimated value ten-pence per pound.

Per ship Sesostris.

1 Parcel. 2 lb. from American seed, district of Guntoor, with the seed.	Of fine quality, but uneven in length of staple.—Not marketable with the seed.

1 Parcel.

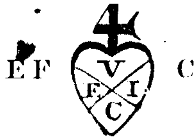
Report on Samples of Cotton from India, May 1834.

1 Parcel. 2lb. the same growth without seed.	Much injured in cleaning, a good deal of short staple, and much stained. About six-pence halfpenny per pound.
1 Parcel. $1\frac{1}{2}$ lb. from New Orleans' seed, district of Salem, with the seed.	This is fine cotton with pretty good staple.
1 Parcel. 2 lb. picked at Madras from cotton received from Tinnevelly with the seed.	Very clean, of good quality and strong fibre, but uneven as to length of staple; part of it is very short. Estimated value about eightpence per pound.
1 Parcel. Seed unknown. From Coimbatore with the seed.	Fine, but of uneven staple, and for the most part very tender.

No. 100.

Report on Samples of Cotton from India, Feb. 1835.

No. 1. Report *on eighteen bales of Cotton from the Experimental Farm in Guzerat, received per ship Protector in* 1833, *dated East-India House, February* 1835.

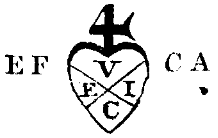
MARK.	QUALITY.
8 Bales 	4 bales, quite clean and bright cotton. 4 bales nearly the same but with a little of the leaf remaining. The whole much injured in the staple by ginning. Present value five-pence

Report on Samples of Cotton from India, Feb. 1834.

five-pence farthing to five-pence halfpenny per pound.

These eight bales are scarcely so good as the twenty-one received per *Earl of Eldon*, which had been cleaned in the same way, and were sold on the 23d March 1832 at six-pence five-eighths per pound. They had been previously valued at five-pence to five-pence halfpenny per pound in London and at Liverpool.

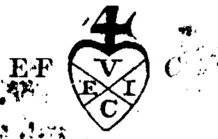
9 Bales.



1832.

Very clean and bright cotton. The staple fair, but a little injured by the ginning. Value about six-pence per pound.

1 Bale marked New Orleans.



1832.

Very clean and bright cotton, but the staple very short, and rather coarse. Injured by the ginning.

This cotton was probably raised from Indian seed, with the exception of the bale marked "New Orleans," which is presumed to be from the seed sent out by the Court.

Report on Samples of Cotton from India, 1834.

No. 101.

No. 2. Report *on sixty-two bales of Cotton from the Experimental Farms in Guzerat, received per ship Lady Feversham in* 1834.

MARKS ON THE BALES.	QUALITY.
Experimental Farm. 34 Bales B Guzerat 1833. Churka.	Good cotton with fine staple, a little of the leaf. Appears equal to fine Surat, now worth seven-pence three-farthings to eight-pence per pound.
7 Bales above marks, and saw-gin, 1833.	Very clean shewy cotton but injured in the cleaning; the staple very short, and apparently cut. Eight-pence halfpenny per pound.
1 Bale above marks, and saw-gin. New Orleans 1832.	Very clean shewy cotton, better staple than the preceding (seventeen bales), but somewhat injured in cleaning. Eight-pence halfpenny to nine-pence per pound.
4 Bales Guzerat B, 1832.	Very ordinary staple, short, and there is a good deal of broken leaf. Five-pence per pound.
Experimental Farm. 1 Bale Guzerat, New Orleans, saw-gin, 1832.	Good cotton, very clean and bright, pretty good staple, but rather injured in cleaning. Eight-pence halfpenny to nine-pence per pound.
1 Half-bale Guzerat, saw-gin, 1832.	Sample of very uneven quality; partly cleaned and of fair staple, and partly mixed with broken

Report on Samples of Cotton, from India, 1834.

	leaf. Seven-pence to seven-pence halfpenny per pound.
From Perennial Farm at Seegeehulee. 2 Bales white-seed, November 1832.	Very clean and shewy, but some part greatly injured in cleaning; mixed with small white knots (or useless fibre), which are very objectionable. Seven-pence halfpenny to eight-pence halfpenny per pound.
1 Bale American Annual, grown as Perennial, saw-gin, 1832.	Much the same as former two bales. Eight-pence to eight-pence farthing per pound.
From Dharwar. 1 Bale New Orleans, Dharwar, 1830-31, saw-gin.	Clean and of fine creamy colour; fair staple but a little injured by cleaning; many small white knots (useless fibres). Eight-pence per pound.
62 Bales.	

The valuation affixed to the cotton which appears to have been injured in the cleaning cannot be given with much confidence, as those parcels may not find purchasers for spinning; but these moderate quantities of clean cotton would probably be taken for candlewick, jewellers' purposes, &c., at the prices herein stated.

Report on Samples of Cotton from India, 1834.

No. 102.

No. 3. Report *on two small bales of Cotton of experimental growth, received from Bombay per ship Lady Nugent, in* 1834.

Per *Lady Nugent.*	QUALITY.
No. 1. White-seeded Perennial, Farm Seegeehulee, Dharwar.	This cotton is remarkably clean, but the staple is injured by the process used, which renders it unsuitable for general purposes. It has numerous small white tufts or knobs of cotton, which cannot be drawn out in spinning, and must therefore prove injurious to the yarn. Worth about nine-pence to nine-pence halfpenny for a small quantity, but a large parcel would not produce more than eight-pence halfpenny per pound.
No. 2. American Annual, Farm Seegeehulee, Dharwar.	Very clean and of good colour, but still more injured in cleaning than the former sample. Value eight-pence to eight-pence halfpenny per pound for a small quantity.

It is not stated in the correspondence in what mode these specimens have been cleaned.

No. 103.

Report on Samples of Cotton from India, 1834.

No. 4. Report *on a box of specimens of Cotton received from Bombay per ship Boyne in* 1834.

MARKS.	QUALITY.
No. 1. Common Bazaar, dirty cotton. Foot-roller.	Badly cleaned, tender staple and stained. Value about six-pence three-farthings per pound.
No. 1. New Orleans. Saw-gin *altered.*	See remarks on first sample per *Lady Nugent*, which apply here, except that the staple is rather less injured by cleaning. Value about nine-pence halfpenny per pound.
No. 2. Common Bazar, dirty cotton; seed separated by saw-gin, cylinders revolving two hundred and ten times in a minute.	Not well cleaned from leaf and the sample a little injured. Value seven-pence per pound.
No. 2 (bis). Ditto ninety times per minute.	Nearly free from seed but some leaf remains; a little injured by machine. Value six-pence half-penny per lb.
No. 2 (ter). Ditto three hundred times per minute.	Foul with seeds and leaf.
No. 2*. Very small specimen. New Orleans, saw-gin, bowed and carded.	Clean, but the staple injured.

Good

Report on Samples of Cotton from India, 1834.

No. 2**. New Orleans, saw-gin and bowed.	Good cotton, quite clean, but the staple a little injured. Value nine-pence halfpenny per pound.
No. 3. Darwar cotton brought clean from the field; seed separated by the foot-roller.	Well cleaned, good staple, and very little injured. Value eight-pence-three-farthings per pound.
No. 4. Ditto, by saw-gin.	Very clean, but staple injured. Value eight-pence per pound.
No. 4*. New Orleans, churka and bowed.	Well cleaned good cotton. Value nine-pence per pound.
No. 5. American annual green-seeded, Darwar saw-gin.	Similar to sample No. 2, per *Lady Nugent*. Value eight-pence to eight-pence halfpenny per pound.
No. 5*. New Orleans, saw-gin altered.	Much like No. 4*, but slightly injured by the machine.
No. 6. White-seeded perennial (first crop injured by rains;) saw-gin.	Clean, but the staple much cut. Value eight-pence per pound.
No. 7. White-seeded perennial (November 1832,) saw-gin.	Like sample No. 1 per *Lady Nugent*, perhaps rather preferable. Value nine-pence halfpenny per pound.
No. 7. Egyptian (saw gin).	Staple cut to pieces. This growth of cotton should not be cleaned by the saw-gin.
No. 8. Egyptian (churka).	Good, long, firm staple, slightly injured in cleaning. Value twelve-pence to thirteen-pence per pound. Equal to Bahia cotton. This growth

Report on Samples of Cotton from India, 1834.

	growth seems worthy of particular attention, and should be well cleaned in the native manner.
No. 8*. White-seeded perennial (kupas), November 1832.	Fine strong silky staple, but short. Not merchantable, being with the seed..
No. 9. Upland Georgia (specimen sent from England for experiment). Seed separated at Darwar, by saw-gin.	Well cleaned and but little injured in the process. Value ninepence per lb.
No. 9*. Bourbon (saw-gin).	Fine staple, but injured in cleaning. The saw-gin is not suitable to Bourbon cotton. Value ninepence per pound.
No. 10. Bowed cotton. (Common Bazar, to shew the effect of the process). N.B. Bowing costs about ten rupees per candy. In the saw-gin this process is performed by the brushes.	A little injured in the staple and not quite free from leaf. Value nine-pence per pound.
No. 10*. Bourbon, saw-gin and bowed.	Very clean, but much cut. Value nine-pence per pound. See remark on No. 9*.
No. 11. Nowlgoond, brought clean from the field. (Foot-roller.)	Good cotton and well cleaned, staple very slightly injured. Value eight-pence halfpenny per pound.

Not

Report on Samples of Cotton from India, 1834.

No. 11*. Bourbon. (churka.)	Not quite clean, a little injured in staple. Value nine-pence three-farthings per lb.
No. 12. (missing.)	
No 13. Broach. Churka. Old dirty kupas.	Well cleaned with little injury to staple. Value six-pence three-farthings per pound.
No. 14. Broach. Churka and bowed, (old and dirty.)	Pretty well cleaned, somewhat injured in staple. Value seven-pence half-penny per pound.
No. 15. Broach. Saw-gin. Old and very dirty kupas.	Not well cleaned from leaf, and much cut. Value seven-pence half-penny per pound.

GENERAL REMARKS.

The white-seeded perennial cotton, the new Orleans, and the Egyptian, appear to be deserving of particular attention in future experimental cultivation.

The American kinds which have been grown in India have the creamy colour common to Indian cotton, but that is no disadvantage. The growth in the United States is white.

The Egyptian specimens, above described, are full as brown as the merchantable cotton imported from Egypt; but that colour is not a disadvantage, as the cotton bleaches well. The seed cultivated in Egypt with so much success of late years, is understood to have been from Pernambuco, in which country the produce is remarkably white.

May it not be advisable to order some seed to

be

be sent from Egypt to Bombay by the shortest route, as early as possible? The endeavours which were made in 1829-30 to procure some seed from Egypt, *via* London, were unsuccessful. Report on Samples of Cotton from India, 1834.

No. 104.

East India House, June 1836.

REPORT *on seven small bales of Cotton forwarded to the Court of Directors by the Agricultural and Horticultural Society of India, dated Calcutta, 19th October* 1835: *per ship Bussorah Merchant, arrived February* 1836. Report on Samples of Cotton from India, 19 Oct. 1835.

MARK.	QUALITY.
No. 1. From upland Georgia seed sown in 1831, gathered in spring of 1832. Cleaned by saw-gin.	Very middling; clean but poor uneven staple, slightly injured in cleaning, brownish colour. Estimated value seven-pence halfpenny per pound.
No. 2. Ditto 1832-3. Cleaned by saw-gin.	Good, fair, clean, and bright, more even in staple, nine-pence per pound.
No. 3. Ditto, 1832-3. Cleaned by saw-gin.	Not so clean, eight-pence halfpenny per pound.
No. 4. Ditto, ditto, churka.	Fair uneven staple, a little leaf remains, rather higher colour, eight-pence per pound.
No 5. Bourbon seed 1831-2, saw-gin.	Very middling, tolerable clean, and good colour, much injured in staple, six-pence half-penny per pound. (The saw-gin is unsuitable to this kind of cotton.)

Fair,

Report on Samples of Cotton from India, 19 Oct. 1835.

No. 6. Sea Island, 1832-3. Churka.	Fair, fine, but uneven staple, a little leaf and much stained. Had this growth been well got up and free from stain, it would have been worth about twelve-pence per pound. (The saw-gin is not used for *Sea Island cotton* in North America.
No. 9. Upland Georgia from acclimated seed at Achra, being one year in descent from the imported seed. Churka.)	Very middling, rather fine but short and uneven staple, tolerably clean, and rather high colour, eight-pence per pound.

Prices in England, June 1836.

Sea Island, 23d to 25d. per lb.
Bourbon, none.
Upland Georgia, 10 to 11.
Surat, 6 to 7½.

No. 105.

LETTER *from the President of the Board of Commissioners for the Affairs of India to the Chairman and Deputy Chairman of the East-India Company, dated India Board, 27th February* 1835.

GENTLEMEN :

Letter from India Board to the Chairs.

I concur entirely in the suggestion contained in the fourth Report on the qualities of cotton, dated the

the 31st ultimo, which you communicated to me yesterday, namely, that it would be advisable to order some seed of the Egyptian cotton, understood to have been brought from Pernambuco, to be sent from Egypt to Bombay as early as possible by the shortest route. Letter from India Board to the Chairs.

I request that you will move the Court to give directions to Lieutenant Burnes to obtain a quantity of this seed in Egypt, and to convey it to Bombay by the steamer *Hugh Lindsay.*

It is a subject of much regret to observe in all the Reports, how much the cotton imported from India has been injured by the injudicious and inexperienced use of the saw-gin.

I beg leave to suggest to you, that it would be expedient to procure from Brazil, the United States, India, and Egypt, the several machines commonly in use for the cleaning of cotton, and to make experiments here, in the presence of practical merchants and scientific men, with a view to ascertaining the relative value of the several machines when used in cleaning the different sorts of cotton, and the best mode of using each machine.

It is by no means improbable, that this comparison may lead to the improvement of the machinery now employed.

It will be necessary to procure a small quantity of

Letter from India Board to the Chairs.

of each sort of cotton in the uncleaned state for the purpose of the experiment.

I have, &c.

(Signed) Ellenborough.

To the Chairman and Deputy Chairman of the East-India Company.

No. 106.

Extract Letter *from the Court of Directors to the Governor in Council at Bombay, dated the 20th March* 1835.

Letter to Bombay, 20 March 1835.

Para. 1. With reference to our letter dated the 4th instant, we now acquaint you, that we have it in contemplation to furnish you with a renewed supply of the seeds of the best kinds of cotton which are cultivated in South America, and also to obtain specimens of the machines used in the Brazils for separating the cotton from the seeds; and it is our intention to transmit a portion of the seeds enveloped in the cotton as gathered from the plant, and one or more of the cleaning machines, to your presidency.

2. We have requested His Majesty's Consul-general in Egypt, who is also an agent there for the East-India Company, to procure seeds of that particular kind of Egyptian cotton, of which large quantities have within the last few years been imported

imported into Britain, where it is highly esteemed, and to consign the seeds to you as early as possible and by the shortest route. We have also desired to have specimens sent to London of the machine used by the Egyptian cultivators for cleaning their cotton, one of which shall be consigned to you.* Letter to Bombay, 20 March 1835.

3. For your more full information, we transmit in the packet copy of our letter, dated 19 March 1835, to Mr. Cunningham, our agent at Rio de Janeiro, and of our letter of the same date to Lieutenant-Colonel Campbell, His Majesty's Consul-general in Egypt,

4. You will acquaint us with the arrival of the Egyptian cotton-seeds when it shall have taken place, and of the disposition which you may make of them.

No. 107.

LETTER *from the Secretary to the Court of Directors to the Company's Agent at Cairo, dated the* 19*th March* 1835.

SIR:

I am commanded by the Court of Directors to request you will be pleased to procure and transmit Letter to the Company's Agent at Cairo, 19 March 1835.

* See paper No. 3, appended to the Court's letter of 4th March 1835, under the heads "Egyptian Saw-gin" and "Egyptian Churka;" also General Remarks in paper No. 4.

Letter to the Company's Agent at Cairo, 19 March 1835.

mit to them, with as much dispatch as the case will permit, a specimen (in duplicate) of the machine or machines chiefly used in cleaning the cotton which is grown in Egypt, and exported from thence to Britain and elsewhere. It is not the desire of the Court to receive any machinery, European or American, which may have been very recently introduced into Egypt, should there have been any such; their present object being to obtain the original machine by which the large quantities of valuable cotton received here from Egyp within a few years, have been cleaned.

The Court request information of the mode of putting these Egyptian machines, if more than one, into motion, and of using them generally; and also to have a supply of from fifty to one hundred pounds-weight of the cotton (with the seeds) *uncleaned*, precisely in the same state in which the cotton appears when gathered from the plant, and about to undergo the process of cleaning.

It is desirable that the sample of cotton should be of the latest crop.

The Court further direct me to signify their request, that you will be pleased to procure a quantity (say one hundred pounds-weight or more) of the seeds of the cotton above adverted to, and transmit the same, as early as possible and by the shortest route, to the Government of Bombay, for experimental cultivation in India, where the Egyptian cotton, although not wholly unknown, appears

appears to have made very trifling progress; and also to forward therewith a portion of the cotton with its seeds as gathered from the plant. Letter to the Company's Agent at Cairo, 19 March 1835.

I am, &c.

(Signed) P. Auber, Secretary.

Lieut-Col. Patrick Campbell, &c. &c. &c.
His Majesty's Consul-general in Egypt, and Agent for the East-India Company, Cairo.

No. 108.

Letter *from the Secretary to the Court of Directors to the Company's Agent at Rio de Janeiro, dated the* 19*th March* 1835.

Sir:

I am commanded by the Court of Directors to request you will be pleased to procure and transmit to them, as early as possible, a specimen (in duplicate) of the most improved machine or machines at present in use for cleaning the fine Brazil cottons, known in the London market as Pernambuco, Bahia, Maranham, Para, and Minas cotton, with an explanation of the mode of putting the machines in motion, and of using them generally.* Letter to the Company's Agent at Rio de Janeiro, 19 March 1835.

The

* *Memorandum.*—In case the saw-gin or North American Whitney machine be used in the Brazils, the Court would be glad

Letter to the Company's Agent at Rio de Janeiro, 19 March 1835.

The Court likewise wish to receive a supply of seeds of those kinds of cotton (say about one hundred pounds-weight of each), together with fifty pounds-weight of some or all of the above kinds of cotton (with the seeds), *uncleaned*, precisely in the state in which the cotton appears when gathered from the plant and about to be submitted to the process of cleaning.

It is desirable that these samples should be of the latest crop.

In case the districts use different machines, it is of importance that samples should be procured of the particular kinds of cotton to which the respective machines are considered most suitable.

I am, Sir, &c.

(Signed) P. AUBER, Secretary.

A. Cunningham, Esq.,
Agent to the East-India Company,
Rio de Janeiro.

glad to know the particulars; but they are possessed of the machine itself, and understand that such machine is not suitable to cleaning Brazil cotton.

No. 109.

LETTER *from the Company's Agent in Egypt to the Court of Directors, dated Alexandria, the 23d October* 1835.

Letter from Egypt to Court of Directors, 23 Oct. 1835.

SIR,

Inclosed I have the honour to transmit to you a bill of lading for a box to your address, which contains the two machines and about one hundred-weight of the cotton (with the seeds) uncleaned, &c., as required by you in your letter of 19th March last.

I also inclose a plan, with explanations, of the manner of putting the machines into motion, and of using them generally.

I shall send to Bombay, without delay, the seeds (about one hundred-weight) of the cotton alluded to, and also about fifty pounds-weight of the cotton (with the seeds in it) in the state in which it is gathered from the plant.

I have the honour to be, Sir,
Your most obedient
and very humble servant,
(Signed) PATRICK CAMPBELL.

Peter Auber, Esq.

MEMORANDUM *for putting up and working the Cotton-Machines.*

Each machine (two in number) is packed in three separate pieces, *viz.* 1st. the body of the machine; 2d. a wheel with iron spindle; and 3d. a long rough piece of wood, with a cord and piece of wood in the shape of a V reversed attached, with which the wheel is to be turned.

The body of the machine, as sent, must be placed upon either a bed of wood or masonry, the end where the wheel is to be fixed being raised above the other as in the accompanying sketch.

In putting the wheel to the machine, the iron spindle must be passed through above the wooden one, at the place marked 1 on the body of the machine, and made to enter at 2. The small piece of wood, A 3, must be placed over the wooden handle on the wheel, and one end of the piece of wood to which 3 is attached by a cord must rest on the ground, to be worked by the foot, in order to turn the wheel.

The person working the machine is seated across at A, turning the handle B with his left hand, and passing the cotton through (a very small quantity at a time), between the wooden spindle C and the iron spindle D, with his right hand, at the same time causing the wheel E to revolve (and consequently the iron spindle D) by pressing his right foot on the piece of wood F (in the

way a small turning-lathe is put in work by the foot), when the cotton will pass through to one side and the seed fall on the other.

It will be necessary to force the wooden spindle C as close up as possible to the iron spindle D, by wedging up the piece of wood marked Z, and to keep the handle of the wheel at 3, and the ends of the wooden spindle oiled or greased, in order to their working freely.

The use of the file sent with the machine is to take off the dirt which will accumulate in the iron spindle. The wedges are to force up the piece of wood marked Z. The dagger-shaped pieces of wood are to be used, both for the purposes of separating the cotton before passing through the machine, should it get hard and in balls, and also for pushing it away, should it accumulate too high after passing through the machine.

The thin slips of wood of the date-tree are to prevent the cotton getting round the iron spindle (D). The slip with the cord wound round it, is placed in between the two uprights (YY) of the machine, close to the iron spindle, but a little above it, on the side the cotton comes out on the other slip, without the cord, is placed in the same manner on the side where the cotton enters.

The cotton before being passed through the machine is (in this country) exposed to the sun in summer, and placed over the roofs of the oven

in winter; it is then slightly beaten and passed through the machine, after which it is placed on a circular frame of wood (see Hurdle in hat-making), having cords stretched tightly and closely across, or in some cases, slips of the date-tree, and well beaten and turned with two thin canes, which separates all the dirt, and it is then ready for the market."

"These machines will clean about half a cantar, or sixty-one pounds of cotton per day; but then there must be a relief of hands, as it is not calculated that one man cleans more than a quarter of a cantar, or about thirty pounds. They are, however, sometimes worked by mules.

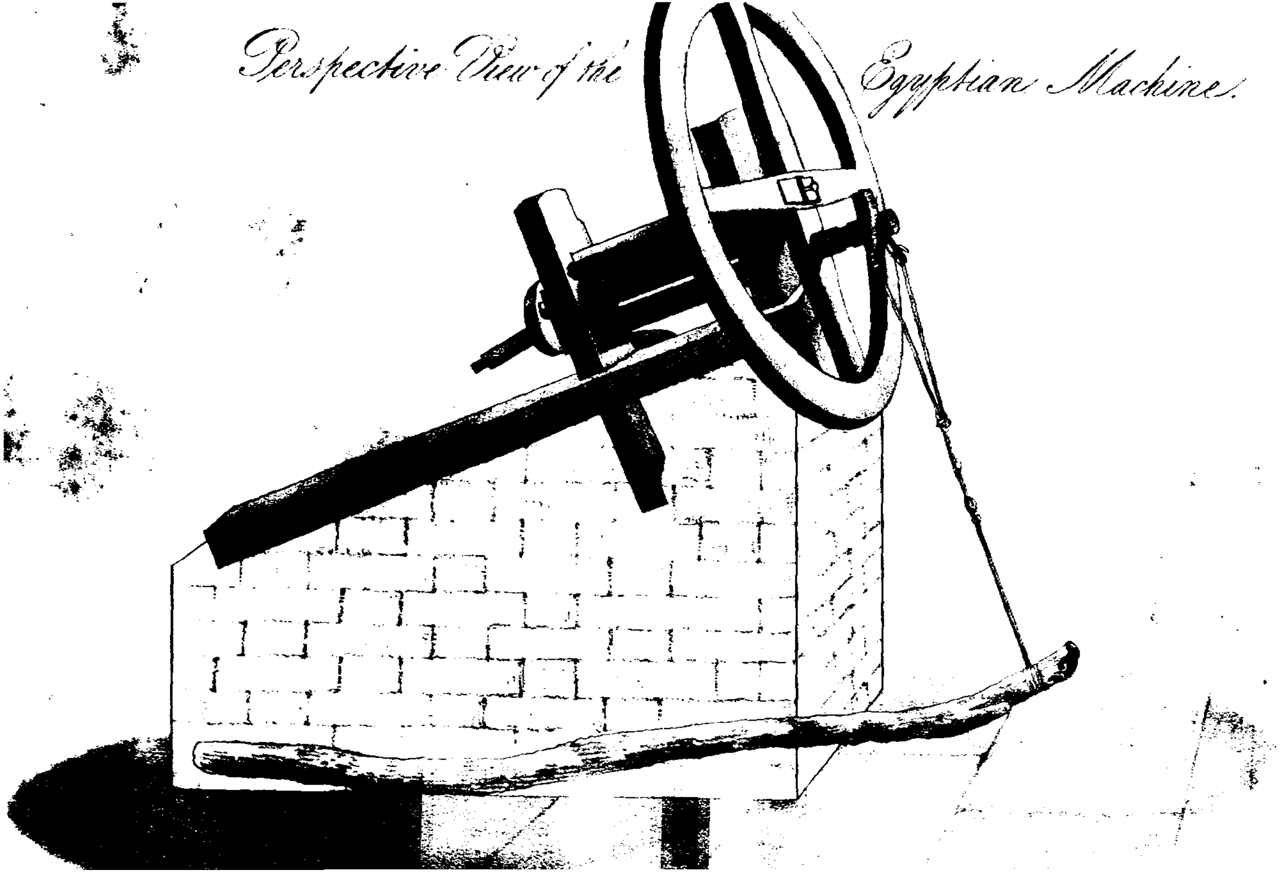
No. 110.

EXTRACT LETTER *from the Governor in Council, Bombay, to the Court of Directors, dated the* 2d *March* 1836.

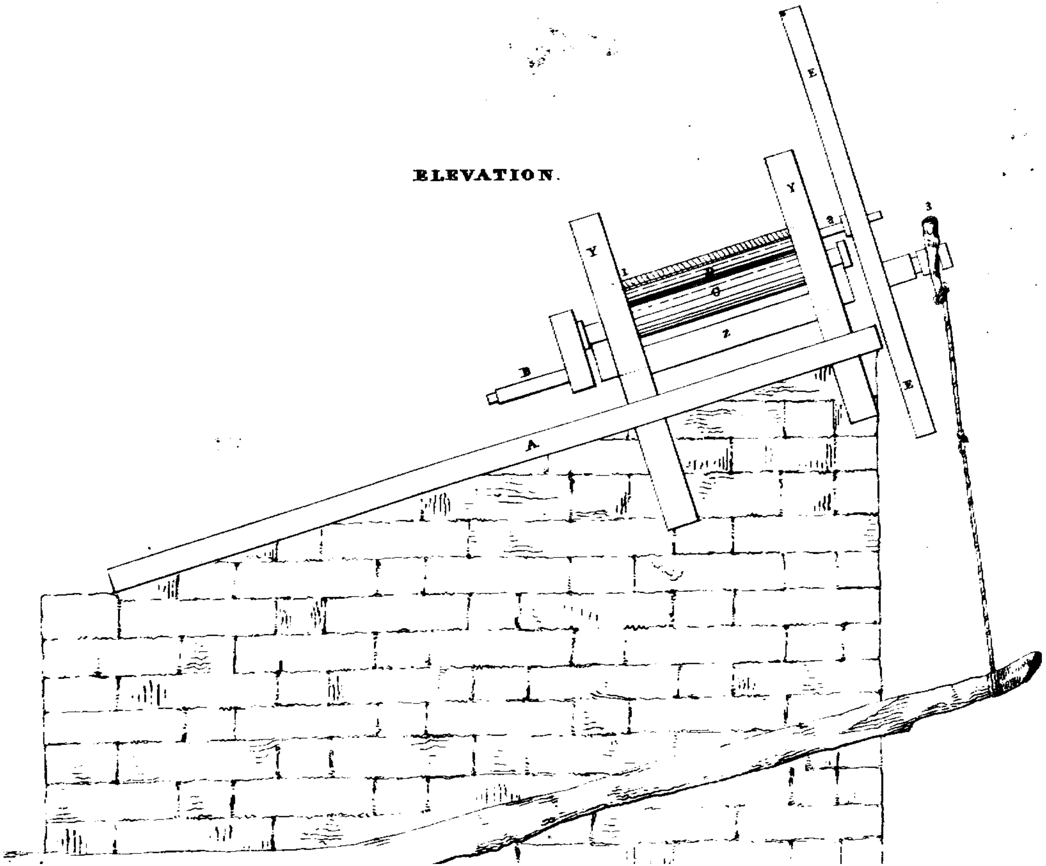
Par. 6. We have received by the steamer *Hugh Lindsay* two boxes, forwarded by Colonel Campbell, His Majesty's Consul-general in Egypt; one containing fifty pounds of best long silk cotton uncleaned with the seed in it, and the other one hundred and twelve pounds of the seed of the same cotton.

7. A portion of the seed has been sent to the farms in Guzerat for cultivation; we have likewise directed

Perspective View of the Egyptian Machine.



ELEVATION.



directed a portion to be sent to Ahmednuggur, for the purpose of being distributed to Buswunt Sing and other cotton speculators in that povince. We shall hereafter have the honour to report the result. Letter from Bombay to Court of Directors, 2 March 1836.

No. 111.

EXTRACT LETTER *from Mr. Secretary Reid to, Charles Lush, Esq., Superintendent of the Botanical Establishment at Dapooree, dated Bombay Castle, the* 22*d August* 1835.

Par. 2. You are requested to procure and send to the presidency a common foot-roller, such as is used in the Southern Mahratta country, for cleaning cotton, and to send at the same time an explanatory account of the mode of using it, as required by the Honourable Court in the concluding paragraph of their letter. Letter from Mr. Reid to C. Lush, Esq. 22 Aug. 1835.

No. 112.

LETTER *from Charles Lush, Esq. to E. H. Townsend, Esq. Acting Secretary to Government at Bombay, dated Dapooree, the 4th December* 1835.

Letter from C. Lush, Esq. to E. H. Townsend, Esq., 4 Dec. 1835.

SIR:

In compliance with directions in the last paragraph of Mr. Secretary Reed's letter of the 22d August, I have the honour to submit a few observations on the subject of separating the seed from cotton, sometimes called *cleaning* cotton, with sketches and specimens of the instruments in use in this country. The object is more particularly to illustrate the use of the foot-roller as required by the Honourable Court of Directors.

2. It may be premised, that these several machines simply separate the seed from the cotton. Cleaning, in India, is a distinct process performed by bowing. The bowstring separates the fibres far and wide, the cotton flies up into the air, and any impurity or dirt, heavier than cotton, falls apart to the ground. The brush cylinder of the American saw-gin performs the same office. But no such process is ordinarily employed for raw cotton for exportation in India. Bowing is preparatory to spinning.

3. It has been laid down as a principle, that the best state in which cotton can be prepared for packing

packing is, as nearly as possible, as it existed in the pod, barring the displacement necessary for separating the seed. This accounts for the superiority of the state of the staple in cotton prepared by the foot roller, *fig.* 1.

Letter from C. Lush, Esq. to E. H. Townsend, Esq., 4 Dec. 1835.

4. The women employed having spread cloths in the banar, put the cotton in the sun in order to crisp the seed. A common smooth stone (usually of granite) A, about a foot square, is placed in front of the woman who sits on a three-legged stool, B. The cotton is rolled on the stone with an iron rod, C, thicker in the middle than at the ends; this is turned round by the feet, which are defended by wooden soles, D.. The seed is *rolled out in front: the cotton comes out under the* stool behind in a continuous web. One woman generally prepares a maund per day, which produces a quarter of a maund of cotton, the seed being three-fourths of the weight. Occasionally the seed is given for the work, instead of money. When the latter is given, at sixpence per day, the expense of getting out the seed may be reckoned at fourteen rupees the Surat candy.

5. The Madras churka, *fig.* 2, and Specimen No. 2, consists of two wooden cylinders moving in an endless screw, at the handle extremity. It does the work neatly, and requires only one person to attend to it; but the operation is so slow, that in an experiment I tried with it at the farm,

Letter from C. Lush, Esq. to E. H. Townsend, Esq., 4 Dec. 1835.

farm, the expense amounted to about forty rupees the Surat candy.

6. The Guzerat churka, *fig.* 3, and Specimen No. 3, is not used in the Southern Mahratta country. It is adapted to any kind of cotton, excepting perhaps the Pernambuco, which appears to require some new process. It would appear, however, from the description of the Pernambuco machine in "Koster's Travels in Brazil," that it is the same as the Guzerat in principle.

7. Now it is found that both these churkas cause a twist of the staple whenever the cotton sticks between the cylinders, or when they are not evenly worked, which in the hands of the unskilful is often the case. The staple is also often injured by tearing the cotton out from between the cylinders.

8. We have not been able to clean any foreign cottons with the foot-roller. The seeds of the latter are more brittle than those of the country cotton, and are smashed and mixed up with the staple.

9. It is obvious that, with the motion of the foot-roller, the staple can neither be broken nor torn, but is simply cut off at its attachment to the skin of the seed.

10. It is then a great desideratum for the Indian cotton, to find some plan of conducting this rolling process by machinery, and it is to be hoped that

that some mechanicians will turn their attention to the construction of something on a large scale, which will give the required pressure to a number of iron rods rolling backwards and forwards upon a hard stone. A machine easily made and repaired, and capable of being worked in the open air, for continued exposure to the sun is required to preserve the seed of a proper degree of elasticity to prevent its being crushed.

Letter from C. Bush, Esq. to E. H. Townsend, Esq. 4 Dec. 1835.

APPENDIX

TO

THE COLLECTION OF PAPE

ON

COTTON-WOOL.

	Produce of the District, sorts, qualities, and uses to which applied.	Quantities In *kupas*, or as gathered from the pod; in *rue*, or after being cleansed from the seed, &c.	Mode of Culture.	Remarks.
BEERBHOOM and BISHENPORE. (C. Keating, Collector.)	Sorts. — One, called bhoga. Quality.—Inferior. Use.—Is spun into thread, from which is manufactured gurrahs, dooties, and other coarse cloths worn by the natives.	Beerbhoom. — 40,000 maunds of sixty sicca-weight. Bishenpore. — 40,000 in kupas, which yields about one-fourth, or 10,000 maunds of ruée. N.B. The expense of cleaning is defrayed by the sale of the husks, seed, &c.	Not described.	The lands yield also a crop of paddy, and from the cotton and paddy the cultivator may derive a profit of 60 per cent.
BURDWAN. (Law-Mercer.)	Sorts.—Three. Caur or nurmah, muhree, and bhoga. Quality.—The caur or nurmah is of the finest	The quantity of each species cannot be ascertained, but in the gross it may be stated at 200,000 maunds of ku-	Nurmah kupàs is cultivated in high spots of ground, called Dauga-land, which besides the nurmah yield a crop of	

	quality, the thread from which is used in nainsooks, mulmuls, seerbettees, doreas, &c. The muhree is inferior, and yields the thread used in weaving finer dooties, guzzees, and gurrahs. The bhoga is again coarser than the muhree, and affords thread for gurrahs and other cloths of similar qualities.	pas, yielding rather under 50,000 maunds of ruée. Nurmah gives rather better than one-fifth; muhree rather under one quarter; bhoga about a quarter.	boot, mustard, &c. Muhree kupas is cultivated only in the pergunnah of Mundulgaut. The land also gives a second crop of small grain. Bhoga kupas is cultivated on land denominated dow fussully, which yields a crop of oure paddy, and afterwards cotton or sugar-cane.	
JESSORE. (T. Henkel, Collector.)	Sorts.—Two. Dessy-kupas and soonder, Of that produced here very little is sold in the market. It is pur-	Jessore............ 1,600 Mahomedstry..... 400 Surfrauzpore and other small talooks 400 2,400	The low situation of the land in this district is unfavourable to the cultivation of cotton, which is produced on high dry	In Jessore, a begah of rich land in a favourable season will produce one and a half maund. In Mahomedstry the

(*Continued.*)	Produce of the District, sorts, qualities, and uses to which applied.	*Quantities.* In *kupas*, or as gathered from the pod; in *ruée*, or after being cleansed from the seed, &c.	Mode of Culture.	Remarks.
JESSORE. (T. Hankel, Collector.)	chased of the ryots in the kupas state, then cleared and spun into thread. Some also is used in quilting beds, &c. The soonder is somewhat inferior to the dessy and used for the same purpose. The semel is, however, generally applied to quilting, stuffing beds, &c. the fibres being too short and tender for spinning.		land. The growth is confined to Jessore, Mahomedstry, and some of the small talooks on the banks of the Issamolah river. The dessy-kupas is planted in May and bears a small crop in October; but a more ample one in April and May following, which, in fact is the proper season. The plant is then destroyed by some, but continued by others for another year, though it is then less productive.	produce of a begah exceeds that. Were the above the average return, it would doubtless be an inducement to extend the cultivation; but formed under the most favourable circumstances, no adequate advantages can be expected under the event of a partial failure, the process of cultivation being expensive.

The shrub is from three to five feet high and has but few branches.

The soonder is planted in October and yields a crop in May. Its quality is inferior to the dessy: its quantity is greatly so.

This shrub seldom exceeds three feet, its branches short and bushy and corresponds with the bhoga cotton produced in Boosna and on the northern side of the Ganges. The ryot ought to derive a greater profit from this than from any other part of husbandry, for the virtues of the

(*Continued.*)	Produce of the District, sorts, qualities, and uses to which applied.	Quantities In *kupas*, or as gathered from the pod ; in *ruée*, or after being cleansed from the seed, &c.	Mode of Culture.	Remarks.
JESSORE, (T. Hankel, Collector.)			land become so exhausted *that it* remains unused for two or three years after. The greatest disadvantages under which the culture of the cotton-plant here labours, are the general unfavourableness of the sale and the want of means in the ryots to defray the charges of cultivation, which it appears are great, and require a small capital to effect. To the	

first no remedy can be easily applied. There is, however, land enough to push the cultivation to a considerable extent, if the ryots had the means; but poverty reduces them to the necessity of raising crops upon them less expensive in the mode of culture, and that afford a more speedy return.

To remedy this, as well as to encourage the growth of so useful an article, I humbly propose that an advance of money be made to the ryot at the proper season. The increase of its cultivation

(*Continued.*)	Produce of the district, sorts, qualities, and uses to which applied.	Quantities In *kupas*, or as gathered from the pod; in *ruée*, or after being cleansed from the seed, &c.	Mode of Culture.	Remarks.
JESSORE. (T. Hankel, Collector.)			is worthy of attention, as the cotton produced in these districts seems to be of a good quality, a specimen of which, as well as that imported, accompanies. Government would sustain no loss, as it would be the duty of the Collector to see that the advances were made to responsible ryots.	
MYMENSING. (W. Wroughton, Collector.)	Sorts.—Two, each varying in quality, according to the soil they	Not described.	The first sort is the growth of a plant which rises to about two feet;	If a favourable season, each cannah of three begahs will produce ten

are cultivated in.

The first is of a fine delicate quality, and from which all the thread is spun for fine cloths, particularly those of a fine and even texture.

The second is of a thicker and harder contexture fit only for strong and substantial cloths.

the second from a plant or shrub which attains to four or five feet.

The first is the most general, and produces one crop a year; but when reaped the plant is of no further utility, and is expended in fuel.

The second produces two crops in a year, is sown in the high dry lands, and if the season is pretty favourable, will last three years without any additional labour, but of gradual diminution, both of quantity and quality.

The plant being liable

maunds; but the care required in its cultivation, the number of people employed in clearing the ground, keeping it free from weeds, destroying the insects which some quality of the plant brings, makes it not only very expensive but equally laborious. If therefore to the profits, which in a successful season are considerable, is opposed the precariousness of these gains, the accidents to which it is at all times exposed, and the difficulty and labour required to bring it to perfection,

(*Continued.*)	Produce of the District. sorts, qualities, and uses to which applied.	Quantities In *kupas*, or as gathered from the pod; in *ruée*, or after being cleansed from the seed, &c.	Mode of Culture.	Remarks.
MYMENSING. (W. Wroughton, Collector.)		Not described	to many accidents, the culture of it is attended with much risk. A superfluity of rain rots and decays it, a drought kills it; and it is of so very delicate and tender a nature, that even a few days of unseasonable weather so much hurts the growth and reduces the quantity of cotton, that the same number of plants which yield in one year ten maunds will not in another produce four.	the cultivator will be found dearly to have earned the fruits of his industry.

			The above observations relate to the short plant from which the fine cotton is produced. Though the same difficulty and labour attend the sowing, rearing, and bringing to perfection the tall shrub, it is however from its substance and size very hardy, and being cultivated only on very high lands, is not exposed to partial inundations.	
MOORSHED-ABAD. (J. Fendal, Collector.)	Sorts. — Two. Nurmah and bhoga. Quality.—The nurmah is finer than the bhoga and yields thread for fine cloths: it is also used in quilts and stuf-	Of nurmah, 3,000 to 4,000 maunds. Bhoga, 5,000 to 6,000 maunds.	Not described.	Grain cultivated with cotton.

(*Continued.*)	Produce of the district, sorts, qualities, and uses to which applied.	Quantities In *kupas*, or as gathered from the pod; in *ruée*, or after being cleansed from the seed, &c.	Mode of Culture.	Remarks.
MOORSHED-ABAD. (J. Fendal, Collector.)	fing for beds for the more opulent natives. The bhoga is used for coarse cloths, and in quilts for beds for the poorer natives.			
NUDDEA. (F. Redfearn, Collector.)	Sorts.—Three. Beach, bhoga, and ruee, from the semel-tree. Quality.—The beach is used entirely for spinning fine thread. The bhoga for a coarser thread, for cloths worn by the natives. The ruée, from the semel,	Of beach, 20,000 maunds of 60 sicca-weight. Of bhoga, 8,000 ditto. Of semel, 2,000 ditto.	Not described.	The district which annually yields cotton on the same land is but of trifling extent, and entirely situated on the west side the Hooghly, within or adjoining to the Burdwan district. The yearly net gain of a begah producing bogah

is used for stuffing beds, &c.			and no other crop is in common about 1. 8. per begah. But in the Nuddea district, from the inferior quality of the soil and want of manure, the same land will not produce cotton, on an average, above two years in eight; and whilst the cultivator must pay for his land, whether it be productive or not, it is extremely difficult to ascertain the profit gained by cotton alone. The profit may be four rupees per begah. The rice and other grain of two succeeding

(*Continued.*)	Produce of the District, sorts, qualities, and uses to which applied.	Quantities In *kupas*, or as gathered from the pod; in *rueé*, or after being cleansed from the seed, &c.	Mode of Culture.	Remarks.
NUDDEA. (F. Redfearn, Collector.)				years may also equal the above; yet as the *four* remaining years it remains fallow, the *profit* will not, on the average, be more than *one rupee* per begah per annum.
PURNEAH. (S. G. Heatly, Collector.)	Being only cultivated for the purpose of manufacturing coarse cloths for the use of the cultivators, and never perhaps brought to market, the sorts, quantities, or prices cannot be specified. No cotton, such as fine cloths	Not described.	The red-flowered tree is seldom cultivated; what is produced is from the white sorts. The cultivation was formerly abundant, but declined, in consequence of the imports from Patna and Mirzapore, which un-	

	are made of, appears to have been ever grown in the district.		dersell the cotton of the growth of Purneah.
RAJESHYE. (Mr. Atkinson, Collector.)	Sorts.—Four. A, B, C, D. A. The thread of this assortment is of the finest texture and used in cloths of finest qualities. B. The thread is coarser than A, and is apt to swell when the cloth is washed. C. Of a colour somewhat inferior to A or B. The cloth may be bleached white, but the thread is weakened by the operation.	Quantity trifling, and never sold either in kupas or ruée, but only in thread. Kupas gives of ruée: A, three-sixteenths, owing to the largeness of the seeds. B, one-fourth. C, three-sixteenths. D, two-sixteenths.	A. This plant is only produced in the best and highest situated lands, and usually round the ryots' houses. It bears a full crop for the two first years only, the third is inferior; after which the land must be well ploughed, and lie fallow for two years, if cotton is intended to be planted in the same ground again. B. *Is* produced in high lands and strong clayey soil, principally to the westward of the Cossim-

A

(*Continued.*)	Produce of the District, sorts, qualities, and uses to which applied.	Quantities. In *kupas*, or as gathered from the pod; in *rufe*, or after being cleansed from the seed, &c.	Mode of Culture.	Remarks.
RAJESHYE. (Mr. Atkinson, Collector)	D. Of a very good colour.		bazar River. It is frequently planted on the banks of the tanks, as it requires constant watering. The plant must be renewed every year. C, is of the growth of the lower lands; the ground is managed in the same manner as lands produce. See letter A. D, is produced in the lower lands, where water is easily procured. The plant must be renewed every fourth year.	

RUNGPORE. (D. H. McDowall, Collector.)	Sorts — One, termed chinteah. Quality.—Inferior, and totally unfit for fine cloths, the filaments of its thread being short and harsh and its produce small. The cloths made from it are of the worst and coarsest kind, such as yek-patties,* &c. worn by the lowest class of the natives.	Quantity.—About 1,500 maunds kupas, yielding one-fourth in ruée, or 375.	The nurmah does not thrive on a light or sandy soil, which is the reason why none is grown in Rungpore. The ground ought to be rich and the situation high and dry, to admit of the water running early off. It thrives best on the sides or at the bottom of the hills, from whence the whole of the quantity used in this district is imported. It is sown in February and March, and reaped in September, October, and November. The distance between the plants is two feet or something	One begah yields in general six daungs, equal to six maunds of 60 sicca-weight of kupas, which when divested of seeds, &c., estimated at eleven and a half chittack per seer, produces 1 M. 27 S. &c. of good cotton. On the borders of Bootan, to the northward of this district, rent is paid in kind at five-sixteenths of the produce. Six maunds kupas, at 2 F. A. rupees per maund, is 12 A. rupees: deduct for rent five-sixteenths, there remains profit, including labour and price of seed,

(*Continued.*	Produce of the District, sorts, qualities, and uses to which applied.	Quantities In *kupas*, or as gathered from the pod; in *rué*, or after being cleansed from the seed, &c.	Mode of Culture.	Remarks.
RUNGPORE. (D. H. McDowall, Collector.)			less; and the cultivator, in order to make the most of his land, generally fills up the intermediate spaces with different kinds of grain, which being of a quicker growth is always reaped before the cotton. The plant grows to the height of five feet, and produces a white flower, the pistil of which is red. The ground for the chinteah ought to be high and dry and of a	F. A. Rs. 9. 9. 12. per begah. For other crops which are mixed with cotton he pays separately at the usual rate of such crops. The ryots never cultivate large quantities of land with a view of selling the produce, but merely one or two cottahs about their own houses, for the purpose of providing cloths for themselves and their families; and as the land

light soil. It is sown in March and reaped in August. Cultivation the same as for nurmah, but its produce is much less. Its flower is red and the colour of its kupas yellow.	is also sown at the same time with grain, vegetables, &c., the malguzary paid for it therefore cannot be said to be merely on account of the cotton, any more than on account of any of the other articles sown with it. With regard to the profit arising to the cultivator, if the calculation be made upon the produce of the cotton alone, it will appear that in many parts of these districts there is no profit. The utmost that the ryots can procure from a begah of land is fifteen seer,

(*Continued.*)	Produce of the District, sorts, qualities, and uses to which applied.	Quantities In *kupas*, or as gathered from the pod; in *ruée*, or after being cleansed from the seed, &c.	Mode of Culture.	Remarks.
RUNGPORE. (D. H. McDowall, Collector.)				which at the rate of one anna per seer will amount to no more than fifteen annas; whereas the malguzary he must pay for that quantity of land is more than double in some pergunnahs, and in none so low as to admit of a gain, if any allowance be made for the trouble and expense of cultivating it.
SYLHET. (J. Willis, Collector.)	*Sorts.* — Two. Nurmah and bhoga. The bhoga is estimated the best in qua-	About from 2,000 *to* 4,000.	The Sylhet *cotton is* cultivated solely on the small hills. If, after the seed is sown, there is	*The cultivators* are so poor, the whole amount of one man's crop seldom exceeds three maunds.

	lity; both sorts are used for coarse baftaes and guzzins. No cotton for fine thread is produced in the districts. In Turraff and Tipperah, and Sylhet.—Of dhannee, from which is produced the best thread, but not sufficiently good for the Company's investment.		much rain in the months of September and October, the crop in a considerable degree will fail; and subsequently, if there is a drizzling rain for many days without sun, a small worm is produced which destroys the plant.	
TIPPERAH. (J. Buller, Collector.)	But little cotton is cultivated in this district, neither are fine cloths fabricated or used: the manufactures are solely of coarse cloths for the poorer natives.	A large quantity.	Bhoga is sown in Bysaak (April-May) or Jeyte (May-June) and gathered in Kartic (Oct.-Nov.), Aughun (Nov.-Dec.), and Poose, (Dec.-January.) In the month of Phaugun (Feb.-March,) &c. in actual produce.	Scarce any land laid down with cotton.

(*Continued.*)	Produce of the District, sorts, qualities, and uses to which applied.	*Quantities* In *kupas*, or as gathered from the pod; in *ruée*, or after being cleansed from the seed, &c.	Mode of Culture.	Remarks.
TIPPERA H. (J. Buller, Collector.)	The hills supply a kind called bhoga. It is distinguished according to its quality by several names, *viz.* Aurel, Rushum, or Sherrush, which is the 1st sort. Norush, 2d ditto. Kurrah, still finer. Oundar, rauttah, or batteaten. Ponnymower, destroyed by water. Purrenda, gathered after harvest and produced out of season.	From 25,000 to 30,000 maunds. A maund of bhoga kupas will yield sixteen seer of ruée.		

BULDAKEEL. (J. Buller, Collector.)	Only one sort, called setchee. Is chiefly used by the inhabitants for home consumption, in taujeebs, &c.	Not stated.	Cotton is sown in the months of Kartic (Oct.-Nov.) and Aughun (Nov-Dec.) and picked in Bysaak (April-May), Jeyte (May-June), and Assar (Sept.-Dec.)	
BEHAR. (Thomas Law, Collector.)	Sorts. — Two. Rurreah and beerecho. The semul or cotton-tree flourishes in this part of the country, and is used for the insides of pillows, quilts, &c. There is also a cotton at the foot of the hills called rhode, which supplies thread for the inferior cloths.	The kupas give one-fourth in ruée.	Not described.	The rainy season commencing about the time the crop is gathered, and frequently ruining the produce, compels the farmer to let his lands at a moderate assessment, lest the ryots should refuse entering into engagements, whereas, by moderating his demand, he excites them to cultivate a greater quantity

(*Continued.*)	Produce of the District, sorts, qualities, and uses to which applied.	Quantities In *kupas*, or as gathered from the pod; in *ruée*, or after being cleansed from the seed, &c.	Mode of Culture.	Remarks.
BEHAR. (Thomas Law, Collector)				of this valuable produce. Rice and other grains are produced by simply ploughing and sowing. Cotton requires many hands in digging wells, watering, weeding, in the hot season.
RAMGHUR. (Matthew Leslie, Collector.)	Sorts.—Two. The first fine, and requiring great care in the cultivation; the second extremely coarse. It is spun into a thread of which the coarse cloths worn by the natives are made.	Quantity: Of 1st sort 2,986 maunds. 2d 4,440	For the second sort they only burn down the brushwood in the month of Jeyte (May-June), turn up the ground with a plough, and then sow it	The plant, from its great delicacy, is liable to accident from the rains, easterly winds, and white ants.

SHADABAD. (W. A. Brooke, Collector.)	Sorts.—Four. The three best give nearly the same in quality, are very superior, and used for making thread for the finest cloths, though as yet those assortments have not been attempted. What is used in the district is for manufacturing coarse cloth for home consumption or exportation, also in Ropes, Tapes, &c.	Quantity, 54,000 maunds.	Not described.	Medium produce of kupas, six maunds per begah.
SIRCAR SAURUN. (A. Montgomerie, Collector.)	Sorts.—Two. First and Second quality, not very superior; it is used in the manufacture of coarse cloths.	Quantity, 5000 maunds.	Not described.	Profits difficult to be ascertained, as the same land produces also in the year, muckye, raugnee, and Rachur.

	Produce of the District, sorts, qualities, and uses to which applied.	Quantities In *kupas*, or as gathered from the pod ; in *ruée*, or after *being cleansed from the* seed, &c.	Mode of Culture.	Remarks.
TIRHOOT. (R. Bathurst, Collector.)	No fine cloths are made in the district. Sorts.—Five. Choacktee, tarpkee, bhoga, baacrah and nurmah. Choaktee, of a yellow colour, very soft, becomes very white by bleaching. It is used in manufacturing cloths of the same name, as also dooties, &c. worn by the natives. Tarpkee is used for coarse and *middling cloths.* Bhoga. The best sort for	About 1,300 of the different qualities.	Choacktee is the produce of an annual shrub sown in Tirhoot only, and grows to the height of three feet. Tarpkee is the production of a shrub that grows as choacktee; is sown annually, but yields two crops per year. Bhoga is the produce of a shrub similar to the *preceding; affords only* one crop a year, but that abundant.	The best ground is required. The culture of grain requires less trouble, and is not liable to suffer so much from the casualties of the season ; the ryots therefore make that their principal object, and cultivate no more cotton than will probably find a vend.

general demand is used for emmertees ordinary, and in fact every kind to which cotton is employed. Baacrah is short and coarse, and used for ordinary cloths, quilting, making ropes, and other coarse purposes. It is not fit for exportation. Nurmah is soft and fine, and gives thread of an excellent quality for doreahs, taujeebs, &c. and is seldom applied to more ordinary purposes. The quantity is not sufficient for exportation.	Baacrah is the produce of a shrub two feet and a-half high, and yields only one crop per annum. Nurmah is the produce of a tree, seven or eight feet high, which lives three years, and yields one crop each year.

	Produce of the District, sorts, qualities, and uses to which applied.	Quantities In *kupas*, or as gathered from the pod; in *ruée*, or after being cleansed from the seed, &c.	Mode of Culture.	Remarks.
MIDNAPORE. (C. Burrows, Collector.)	Sorts.—Three. Kurruah, mumi, and bhoga burdaw. Quality.—The kurruah is of a soft and fine texture, and yields thread for fine cloths, as namsooks, &c. The mumi is of a firmer but coarser texture, and is used in sannoes, peenas ginghams, and other cloths of a fine and firm fabric. The bhoga is used for ropes and a coarse	Maunds. Kurruah .... 1,979½ Mumi .... 8,051 Bhoga burdaw... 25 Bhoga in ruée ... 19 0	Of the kurruah sort, ten seer in kupas give of cotton prepared for spinning into thread. s.chs. Of the 1st sort ... 1 14 Of the 2d and 3d sorts, each...... 2 3 The mumi, ten seer ditto, will give 1st sort .... 1 14 2d ditto .... 2 3 Bombay being prepared into ruée, 4½ gives for thread 4 0	Produce in cotton, 2 maunds 10 seers per begah; but this is in some degree made up by cultivating mustard-seed and other articles on the same ground. The ryots are obliged to rent a certain quantity of this land with the rice-grounds, otherwise they would not cultivate it. It may be considered as one of the least profitable articles to the ryot that the country pro-

	kind of tape called newar.		Bhoga, ten seer, gives 2 13	
SALT DISTRICT. (B. Grindall, Collector.)	Hidgellee division. Sorts.—One. Dessy kupas, used for thread to make coarse cloths.	A small quantity only is produced by the richer natives for their own consumption; those who do not use it in this way spin it into thread and sell it to the weavers. One seer of kupas gives one quarter of a ruée.	Not described.	One begah of high ground, will in a favourable season produce two maunds of cotton in the husk. Cotton is not an advantageous article to rear: at best it gives but little profit, and sometimes loss. The nature of the soil, from its low situation, is not favourable to its growth.
RANGAMATTY (H. Baillie, Collector.)	In Rangamatty none: but the tributary districts of Bisnee and Curriburry produce about.. It is purchased with great risk and labour by	20,000 maunds.	The kupas is produced in the mountains, and cultivated by a wild savage race of mortals, called Rebbahs, who inhabit therein. Were there	

(*Continued.*)	Produce of the District, sorts, qualities, and uses to which applied.	Quantities In *kupas*, or as gathered from the pod; in *ruée*, or after being cleansed from the seed, &c.	Mode of Culture.	Remarks.
RANGAMATTY (H. Baillie, Collector.)	pykars, who carry into the Jungles and among the mountains, rice, dried fish, and a variety of other things, which they exchange for the kupas. It is bought in the kupas state, and full twenty seer per maund must be allowed for the seed.		people on the low lands in any proportion to the immense tracts lying waste, and they were endowed with any degree of industry, there might be a great quantity produced; but, in the present situation, the produce will greatly depend on the encouragement given to the few inhabitants in this wretched country.	
LUCKIPORE. (Henry Scott, Resident.)	One sort termed langlic. The quality is very superior, and of the same	Quantity cannot be ascertained. Consumption supposed to be from	Not described.	

	kind as used in the Dacca districts for the manufacture of the finest cloths; but the cloths of this Residency being of coarser qualities, fine thread is not here procurable.	50,000 to 60,000 maunds, allowing number of pieces of goods manufactured to be 250,000 pieces.		
MIDNAPORE. (Philip Coales.)	Kupas or country cotton. Of this there are three sorts, kurmah, kurmorie, and bhoga. The kurmah is deemed the best, and is known by the smallness of the seed, and the downy matter that surrounds it being soft and white. The kurmorie is preferred next, and is distinguished only by the	Maunds. Kurmah .... 1595 Kurmorie .... 500 Bhoga .... 60 A seer of the above, after cleansing, carding, and separating from the seeds, will give as follows:— Kurmah, or fine chassa. Chits. Ruée 3	Kupas is sown in November, and gathered in May and June; and sowed again in June and July, and gathered in September and October.	The produce of a begah, when sown with the kupas in a favourable season, is estimated at four maunds. Grain, mustard-seed, and doll, are cultivated on the same ground with the cotton-plant.

(*Continued.*)	Produce of the District, sorts, qualities, and uses to which applied.	Quantities In *kupas*, or as gathered from the pod ; in *ruée*, or after being cleansed from the seed, &c.	Mode of Culture.	Remarks.
MIDNAPORE. (Philip Coales.)	seeds being a little larger and the downy part not so long, besides being subject to more wastage. The bhoga is inferior in every respect to the two, which may be easily known by its coarseness. All these sorts are sold in their original state in all the hauts and buzars subordinate to this factory. The fine kupas yields thread for mutmuls which cannot be made without it. The bhoga	Gurdah, or coarse ruée .... 1 Seed.................. 12 Kurmorie. Fine .... $2\frac{1}{2}$ Coarse .... 1 Seed................ $12\frac{1}{2}$ Bhoga. Coarse .... 4 Seed................ 12		

	is used chiefly in cossaes, samoes, gurrahs, and inferior goods.			
SANTIPORE. (Edward Fletcher)	Sort.—One. Quality superior to the cotton brought from the upper country, being softer, and capable of being spun into a greater length of fineness. The thread is also of a more even texture. There is also a cotton produced from the semel-tree, used only for quilts, stuffing, beds, &c.	3,500 maunds of kupas It gives about one-quarter of its quantity in ruée. 1,500 maunds.	Kupas is the growth of a shrub which runs to four feet in height.	The ground where cotton is grown requires more cultivation than for grain, and more attention afterwards in weeding, which makes the intermediate expense between the time of preparing the ground and cutting the crop heavy to the cultivator; but if he can afford that, the profit of the harvest amply repays him.
CHITTAGONG. (Thomas Harris, Resident.)	Sorts.—Two. Murmah and bhoga. The first produced on the low	Murmah, 12,500 maunds of 80 sicca-weight; bhoga, 6,000.	Not described.	

	Produce of the District, sorts, qualities, and uses to which applied.	Quantities In *kupas*, or as gathered from the pod; in *ruée*, or after being cleansed from the seed, &c.	Mode of Culture.	Remarks.
	country, the latter on the hills. Hill cotton is only used in coarse goods, unless[*] when the murmah fails.	Five seer of bhoga yields two of rice; five of murmah yields one.		
MALDA. (George Udney.)	Sorts. — Three. Burrabauga, berattabauga, *and murmahbauga.* The burrabauga is very soft and excellent. • Berattabauga is many degrees inferior. Murmahbauga is still harsher and coarse. The whole is almost entirely used in thread.	Burra .... 2,500 Beratta, Murmah } ...... 40,000 Burrabauga becomes when divested of seed about one-fifth or one-sixth less.	Burrabauga grows on high ground—the most part of this district is liable to inundation.	

A

HURRIAUL.

(J. Taylor.)

Produce of the District.

In the Hurriaul aurung, extending to the north as far as Suiganny on the banks of the Boonampoolah, to the south as far as Nakalea Seracca on the skirt of the Chal-lum Jeet, to the east as far as Gutty Sarra under the Altea Hills, and to the west as far as Chatenol, no cotton is produced, the country being too low to admit of its growth. Water settling about the roots for any time is destructive to it, and the whole aurung is almost completely under water five months in the year, from the beginning of June to the end of October.

Exports.—None.

Imports.

Sorts.—Four. Dessy, Byratty, Bhoga, and Mirzapore. Of the dessy there are four kinds: dessy, soondee, teepy, and chintea.

Dessy

is contained in a small pod. The threads or fibres which form the cotton are long, fine, and strong, and it can be spun with thread of any degree of fineness. Thread made from cotton improves on being washed, contracting in water, and thereby acquiring a superior degree of fineness.

Byratty

is contained in a large pod. The threads are shorter, coarse, and less strong than dessy, nor can it be spun into threads of the same degree of fineness. The thread swells

swells a little on being washed, and cloths made with it do not wear so well as those from dessy.

Bhoga

grows on a still longer pod than the byratty. The threads which form its cotton are shorter and coarse, and less capable of being spun into fine thread. The thread which is made from it swells much on its first washing, and is less durable than thread of either of the other sorts.

Mirzapore

is considered to be a little superior to the byratty. The threads are a little stronger and longer, and rather finer thread can be made from it. Cloths made from this species are supposed to last longer than those from byratty.

The quality of the Surat is preferable to either of the foregoing, and is in alm st equal estimation with the dessy, but is not capable of being spun into such fine thread.

The finest fibres of kupas are those which adhere firmly to the seed, and from which they can be separated only by a machine. From this superior part of the kupas, the spinners who make the finest thread carefully remove, by means of a fine comb, all the looser and coarser fibres. By this operation the fine p rt of the kupas is rendered perfectly clean, and can be spun by fine spinners into any degree of fineness. This process of separating the finer from the coarser fibres appears to create the distinction between the capacity of the dessy kupas and the Surat cotton. The fibres of the last being all mixed, it is not capable, from its inequalities, of being spun into such fine thread as the dessy; yet equal care in the original preparation of it seems alone wanting to give it that

that ability. The spinners, excepting those who make the finest thread, in general prefer the Surat cotton to the dessy kupas, the last requiring trouble to separate the seeds from it, and the first being so far ready to their hands.

Uses.

In respect to their uses, the dessy kupas is particularly adapted, for the reason which has been assigned to the manufacturer of the finest thread; yet it can be also spun into the coarsest thread, it differing only from the coarse thread made of inferior kupas in this, that it will be more soft and strong. When it can be procured at Hurriaul it is preferred to all other kupas, and in the eastern parts of the aurung is almost invariably used for the fine and middling cossaes, the fine and superfine humhums, and in the fine and middling addatties.

The byratty is principally used in the northern and western parts of the aurung, and furnishes thread for the ordinary and middling humhums, the cossaes forty and two-and-a-quarter, and forty by three, and a small proportion of cossaes by two-and-a-quarter.

The bhoga furnishes no thread which is used in any of the Company's assortments in Hurriaul; it is applied to the coarse cloths worn by natives.

The Mirzapore, when dessy is not procurable, is used for making thread for cloths of every assortment provided for the Company; but the superfine humhums made from such thread are of an inferior kind, and cannot be made to pass higher than the third letter.

The Surat, when procurable, is used for making thread for cloths of every assortment provided for the Company.

Dessy

grows in the Islamatty country, a northern branch of the Pudda

Pudda or great river, on the banks of the Chudna, a southern branch, and on the banks of various other nullahs which communicate with the Pudda and intersect the eastern provinces, particularly Boosnea.

Byratty

is imported from the district west of the Coratty, a river principally from Sibberries and the Momensi pergunnah, of which Seerpore is the head, in which district it is produced.

Bhoga

is imported from Chilmary, Dewan Gurge, and Seerpore Duscownya, to which places it is brought from the Curry-barry hills, north of Burrumpoota, where it is produced.

Mirzapore.

The first importation was in 1783, before which the supplies were from Surat. No Surat, except a few hundred maunds for the purpose of attempting an improvement in the quality of the thread, has been introduced for some years, the comparative cheapness of the Mirzapore having probably discouraged the importation. The Resident (Mr. Taylor) at this station had once an opinion that the quality of the Surat and Mirzapore cotton were the same, but he is now convinced the Surat is the superior.

In 1782-3 the whole provision of the Company's investment was made from dessy and byratty kupas. In 1783-4 a small quantity of Mirzapore was imported and used for the first. It sold cheap, about seven and a-half or eight rupees per maund of 60 sicca-weight, and about one-fourth of Company's cloths were manufactured with it.

In 1784-5 this proportion was increased; and in 1786-7 and the two succeeding years, about half of the cloths are supposed to have been made with it.

QUANTITY.

Quantity.

Not exceeding 15,000 maunds, chiefly of the Mirzapore assortment.

16 chittaks of	dessy kupa	will give	$2\frac{1}{2}$	of fine cottons
Ditto	Byratty	ditto	$3\frac{1}{2}$	ditto
Ditto	Bhoga	ditto	$4\frac{1}{2}$	ditto
Ditto	Mirzapore	ditto	12 *a* 13	ditto
Ditto	Surat	ditto	14	ditto

Mode of Culture.

The Dessy Kupas.

In Cheyte (Mar.-April) the ground being ploughed up. In Bysaak (April-May) the cotton-seed is sown usually mixed with ouse-paddy. In Baudun (Aug.-Sept.) the ouse crop is cut, and the cotton-plants which remain produce in Bysaak (April-May) following at the rate of from four to six maunds per begah. If the plants remain after the first crop, the ground is dug up as in the preceding year; and a month or two after, generally in Asaar (Sep.-Oct.) the ground is a second time dug up, and in Bysaak (April-May) following the plants will yield a third crop of from twenty seer to one maund per begah, after which the plants are always cut down.

The dessy plants grow to the height of six or seven feet. The situation proper for them must be high ground; such, at least, on which water does not settle. A foot or two of water remaining about the roots of the plants for a few days will do them no injury, but if it remain fifteen or twenty days the plant will be destroyed. Of this kupas there is a considerable quantity on the banks of the Islamatty, from a little to the northward of Boolbarry all the way up to Pubna.

The

The Soondry Kupas.

The seed of this plant is sown in rows in Jeyte (May-June), frequently with tobacco or turmeric, and yields in Baudun (Aug.-Sept.) from three to four maunds per begah. It grows to the height of from eighteen to twenty inches. It dies after its produce in Baudun (Aug.-Sept.): the root rots if any water settles at it, even for a few days. The cultivation of this plant is much more limited than the dessy; it can only grow on very high ground not subject to be overflowed. The kupas produced from it is reckoned rather superior to the common dessy. A quantity of it grows on the banks of the Islamatty.

The Tupy or *Tingry Kupas.*

The seed of this plant is sown inrows in canties, and yields in Bysaak (April-May). The produce is said to be no more than two maunds. If suffered to remain on the ground it will yield a second crop in Baudun (Aug.-Sept.) of about one-fourth of the quantity of the first, but in general it is rooted up after the first crop. It grows to the height of from two to three feet.

A considerable quantity of this cotton grows on the banks of most of the rivers which intersect Boosna, and in other high ground in that district: the kupas produced from it is much esteemed.

The Chintea or *Bowally Kupas.*

The seed of this plant is sown in rows in Bysaak (April-May), and produces in Augun (Nov.-Dec.); and again, if suffered to remain, in Bysaak (April-May) following. The produce of the first crop is from six to seven maunds, and of the second from one to two; the medium seven. The plants are very bushy and grow to the height of six feet. The kupas produced from this plant

plant is reckoned inferior to the common dessy. A quantity of this plant grows about Jeneda and Cullygunge in Mahomedskye.

I have heard of a fifth species of dessy kupas, called beechun, which grows in Boosna. It is said to be sown in Bysaak (April-May) with ouse-paddy, and to produce a crop of about one and a-half maunds in Baudun (Aug.-Sept.). It grows to the height of from twenty to thirty inches. The seed of this crop put into the ground in the month of Kautik (Oct.-Nov.) following will produce another crop in Bysaak (April-May), of from two to three maunds, and the plant of the second crop grows to the height of four and a-half feet. Were it not for the smallness of the crop in Baudun (Aug.-Sept.), I should suspect that this and the soondy are one and the same plant.

The product of each of these different plants is understood to come under the description of dessy kupas. They are either indiscriminately mixed before they are brought for sale, or sold separately, as circumstances render either expedient.

Whether the several species I have mentioned include the whole which come under the description of dessy kupas, or not, I cannot pretend to say. I have seen a muster of what was called the finest Dacca kupas, which was said to have grown on the banks of the Lucka river, and from which the finest Dacca cloths, those particularly of Soonargong, are made.

The kupas of this muster was all of one species, and therefore finer than any of the musters of kupas I had procured, which were all evidently composed of different sorts. It however did not appear superior, either in softness or texture, to some of the kupas of which my musters were composed, and as the plant from which it was gathered was reported to be not higher than from twenty to thirty inches, to be of a very tender nature, and to yield only

only one crop, I should have concluded from all these circumstances that it would be no other than the soondy, which I have seen on the banks of the Islamatty or the Teepy, which grows in Boosna, had not two strong objections presented themselves.

The Dacca plant was said to produce from five to ten maunds of 80 sicca weight, and to sell in the Mofussil at seldom less than four or five rupees per maund; and this year, in the Dacca bazar, at eight rupees per maund of 80 sicca-weight. Now neither the soondy nor torpy kupas are said to produce more than three maunds of 60 siccas, and the medium Mofussil price of cheap and dear years of dessy kupas in the Hurriaul aurung is not higher than Rs. 2. 8. per maund of 60 siccas.

The difference in price may be reconciled, either from the demand for dessy kupas in the Dacca province being generally greater than in the aurung of Hurriaul, or from the circumstances of the superior kupas sold at the latter place being mixed with a much greater proportion of the inferior sort. But the difference of the produce is so great, that unless the Dacca account has been greatly over estimated, and my accounts equally under-estimated, it is scarcely possible to account for such a difference in the produce of the plants from any peculiarity in the qualities of their respective soils. Unable to obviate or establish this last objection, I cannot determine whether the kupas in question be, or be not, the produce of a distinct plant.

Of the cultivation of the byratty, or second kind of kupas used in the Hurriaul aurung, I have not been able to obtain any other information, than that the seed is sown in Kautik (Oct.-Nov.), and produces on an average about five maunds per begah in Cheyte (Mar.-April) following, and that the plant grows to the height of from three to four and a half feet.

Of the bhoga, or third kind of kûpas, I have received a more particular account. Having occasion to visit the distant dependencies of the Hurriaul aurung in July last, I proceeded beyond Beertausa to the banks of the Burrampoota. Having reached this river, the appearance of the Currybarry hills made me desirous of taking a nearer view of them, and I was led on till I reached Chilmary, where they skirt the river. In my way there I stopped at Dewan-gunge, and meeting at this place a very intelligent merchant, named Jugul-saw, who had for many years been largely concerned in the cotton-trade of Currybarry, and who passed a month or two annually in the hills at the Rajah's residence, he gave me the following information of the culture of the bhôga kupas, as practised in the Currybarry hills, which he estimated annually about 20,000 maunds.

In the month of Maug (Jan.-Feb.) the hill people cut down the cotton-trees of the preceding year, and after letting them remain on the ground a month or two they burn them: after which, with a small hand-instrument, the iron of which enters into the ground about the depth of three or four inches, they turn up the earth and mix it with the ashes of the wood, which they consider as a good manure. The first plentiful rains after this operation, whether falling in Cheyte (Mar.-April) or Bysaak (April-May), they sow the cotton-seed, which is put about the depth of two inches into the earth, at the distance of two or three inches from each other. In Jeyte (May-June) the ground is weeded, and at other times when necessary; but no further trouble is taken, either with the ground or the plants, till the produce is gathered in Kautik (Oct.-Nov.). Jugulsaw added, that he had seen the cotton-plantations in the rains, and that they were always dry, the rains never settling on them. He could not, however, inform me of the probable quantity of kupas that each begah had yielded.

As

As from the great scarcity of dessy kupas in the eastern provinces it appeared desirable that the growth of it should be attempted in these hills, which from the description of them seemed extremely well adapted for a trial of the cultivation, I prevailed on Jugul-saw to promise to persuade the Rajah to allot two hundred begahs for an experiment, the Rajah receiving the profit, if they produced any, and being indemnified by me for any loss he might sustain if they failed. The land to be taken from two different places in the hills, at a distance from each other of near two days' journey, and the seed to be sown to be of different species.

In general the cotton-seed is sown with ouse grain and paddy.

FURTHER EXTRACT

FROM THE

REPORTS

OF THE

COLLECTORS AND COMMERCIAL AGENTS,

Made to the Board of Trade, 1789-1790, on the state of the Cultivation and Trade in Cotton.

Appendix.

(*Continued.*)	Produce of the District, sorts, qualities, and uses to which applied.	Quantities, In *kupas*, or as gathered from the pod; in *rue*, or after being cleansed from the seed, &c.	Mode of Culture.	Remarks.
RIPAUL. Philpot.)	Sorts.—Two. Bhoga and corree. The bhoga is of an inferior kind, and only used in the coarsest cloths worn by the poor natives and in guzzies. From the corree is made various sorts of threads used in the Company's investment.	But little. Growth equal to the demand, but not in a quantity to admit of exportation. The ryots, no single one of whom cultivates any great quantity, retail it themselves in the kupas state, but it is to be bought in the haut in small quantities.	The time for sowing the corree is from the end of September to the 20th October, and of gathering from the 12th May to the 20th June. High land may be sowed with mustard, various kind of grain, or sugar-cane, as well as cotton, and would yield one crop of grain; but no article gives an equal profit except sugar-cane.	Produce annually, in good ground, two and a half maunds per begah. Sometimes mustard and grain is sowed between the cotton.

SOONAMOOKY. (J. Cheap.)	This aurung extends over a great tract of country, taking a great part of Burdwan, Beerbhoom, Bishenpore, part of Radeshye, and Moorshedabad. The cotton produced from the three first is nearly of a similar quality; but if there is any preference in point of fineness, it is in Burdwan and Beerbhoom. The Bishenpore is, however, exceedingly well calculated for the purposes of this aurung, the manufactures of which are in general coarse. The Moorshedabad and Radeshye is in general in-	*Consumption* about 2,500 maunds. A maund of kupas will give one-fourth of *ruée.*	The growth of cotton is precarious: it is affected either by the want, *or the superabundance of the rain. On account* of the former, the general cultivation is near rivers or tanks; the latter *it is not in human power* to prevent.	The soil on which cotton is produced, in general produces two crops: *first paddy, and afterwards* kupas. The ryots, for the two last years, on account of the unfavourable season, have, it is *apprehended,* been losers, on which they assert it to be an unprofitable cultivation.

Appendix.

(Continued.)	Produce of the District, sorts, qualities, and uses to which applied.	Quantities, In *kupas*, or as gathered from the pod; in *ruée*, or after being cleansed from the seed, &c.	Mode of Culture.	Remarks.
SOONAMOOKY. (J. Cheap.)	ferior. The Moorsheda-bad will only answer for the whoof; it also labours under the disadvantage of undergoing a second cleansing, *in which it* diminishes considerably from Rs. 3. 4 sr. to 10 seers. There is some of the same quality imported from Mirzapore and Patna. There is no fine cotton in the aurung.	About 2,500 maunds.		

KEERPOY. (Robert Gosling.)	Sorts.—Two. Salche and kurruah; both spun *into thread.*	Not stated.	Salche is sown in January and February, and the produce in May and June. Kurruah is sown in July and August, and gathered in October and November.	Produce of a begah, in tolerable seasons, three to three and a-half maunds.
PATNA. (E. Cole, Resident.)	Sorts. — Five. Bhoga, murmah, rurreah, guzza, and bachree. From the three first are made cloths of the Company's assortments; from the bachree is made the coarsest cloths of all denominations; and from the guzza, kokely, a kind of yellow tinge.	About 10,000 maunds.	Not stated.	
RADNAGORE. (P. Touchet.)	Sorts.—Three. Kurruah, murree, and bhoga. The staple of the first is much the best, uniting strength with softness.	Not stated.	Not stated.	

DACCA.

(John Bebb, Resident.)

Produce *of the District, its* Quality, *and the* Uses *to which it is applied.*

The most valuable in quality, as well as considerable in quantity, is the photee, the finest cotton in the known world, producing cloth of astonishing beauty and fineness. All the thin cloths, as mulmuls, allibaliies, dooreas, terundams, taujeebs, seerbetties, and nainsooks, should be made therewith; except the stripes of the dorees, which should always be made of the serongee or Hindostan, which being of a coarser quality, causes the stripes to be more distinct from the ground. It varies almost in each particular district.

The general distinction in quality the natives make is, whether the thread made therefrom swells or not in the bleaching. That which is in the neighbourhood of the city (Dacca) to the eastward, in the space which ranges from thence by Sonargong, Seetbaddy, Bejeitpore, and Jungle-barry, is reckoned not to swell, if it be not used the same season that it is gathered. The thread made of cotton produced to the south-east, by Narainpore and Cawnpore, swells in bleaching, but less than the Hindostan cotton. The thread in the country west and north-west from thence, Dumroy, Attya, Cogmaria, Hurriaul, Radeshyr, and Boosnea, swells much in bleaching, more especially if it be hard twisted.

It should seem that the very fine cotton, which is free from or least subject to swell, is produced only in the tract first described; but whether this is owing to the soil, the quality of the air, or to any particular art of cultiva-

tion,

tion, is uncertain, and probably cannot be ascertained. The greater part of this tract is for three parts of the year under water, and so is much of the north-west country, in which is produced cotton that swells. Whether the Dacca fine cotton, sown in Bengal or in other parts of the world, would retain this admirable quality, can only be known by actual experiments. It is now making in Bengal.

The April crop is the most esteemed and bears a higher price, and is generally, but not always, the most cultivated. The inferiority in the September crop is probably owing to the vegetation from April to September being more rapid and less substantial. The September cotton should be kept longer before it is used than the April, but both should be kept for a season. The new cotton has a watery softness, and thread made of it swells *more than thread from old cotton.*

Imports.

The Bhoga

is produced in the eastern hills and brought down for sale. It is used in making coarse cloths, such as low-priced baftaes and guzzies, when other cotton is dear; it is also used for the stripes of the dorees, but makes them very indifferently. The quality is coarse, but the thread swells much in bleaching.

Serongee.

Hindostan cotton, so called from the city of Serongee, is known in Calcutta by the name of Mirzapore cotton. It is of a coarser staple, and is used for the stripes of the dorees, to render them more distinct from the ground. It is only fit for baftaes, cossaes, or thick cloth. It has of late been used for the Chaundpore nainsooks, but has greatly hurt the fabric. It is utterly unfit for muslins and

and thin cloths. Its thread proves hard and swells in bleaching. When photee is dear it is often mixed therewith, and used in the seerbetties, seorbauds, and other low-priced muslins, but it hurts the fabric. It is much of the quality of Surat, but not equal thereto.

Surat cotton was formerly brought to this part; but as none has arrived for several years, and probably will not in future, it is not to be considered as a consumption of the province. It may not, however, be amiss to state the opinion stated of its quality. The English manufacturers seem to esteem it more than other cotton carried to England, but they are perfectly ignorant how much its quality is against their attempts to make muslins. It answers admirably for dimities and all Manchester stuffs.

Semul

is the produce of a tree thirty feet high, but the quality is but little valued.

QUANTITIES and PRICE.

Photee.

Of the photee the quantity produced cannot be ascertained: it is certainly not so much as worked up in the district. Any estimate must be vague and uncertain.

Bhoga.

About 1000 or 1200 maunds almost annually; the price always less than the Hindostan province cotton.

Serongee.

About 5000 maunds last year. Three or four years ago it was more considerable; but as there is a large mart for it at Begwargalah, it is from thence carried to the hauts in various parts of the country, and there is no means of ascertaining here the quantity consumed in the

districts

districts, but it is certain the proportion compared with the provincial is very small. It is sold in ruée, and therefore cheaper in reality, though not nominally, than the provincial cotton.

Semel

But trifling.

PRICE *of* COTTON *in the following Periods.*

	1764.		1777.		1789.	
	per Maund of 80 Siccas					
Dacca aurung (great part of it in Dacca)	Rs.	a.	Rs.	a.	Rs.	a.
Photee of the April crop	2	2	2	8	6	0
Ditto August and September.	.	.	.	.	5	8
Soomargong.						
Photee of April crop	2	0	2	8	6	0
Ditto August and September.	.	.	.	.	5	8
Chaundpore.						
Photee of April crop	2	8	3	0	6	4
Ditto August and September.	2	0	2	8	5	12
Serampore.						
Photee	3	4	3	8	5	8
Narrainpore.						
Photee of April crop	.	.	3	8	5	12
Ditto August and September.	.	.	3	0	5	4
Baptpore.						
Photee of April crop	2	6	3	9	6	8
Ditto August and September.	2	1	3	4	5	12
Dumroy.						
Photee of April crop	.	.	2	0	3.15.9	
Tetbaddy.						
Photee of April crop	2	6	3	0	6	8
Ditto August and September.	2	1	3	4	5	12
Seeronjee.						
Dacca aurung	.	.	11	0	19	0
Chundpore	.	.	.	.	20	0

RENT

RENT *of Cotton Lands are as follows:*

	Rs.	a.		Rs.	a.	
In Serampore aurung	8	0	to	13	0	per connah
Chundpore......	5	8	to	6	4	
Narrainpore.....	5	0		.	.	
Tetbaddy.......	2	8		.	.	
Dumroy........	0	12	to	0	14	
Soonargong.....	1	2		.	.	
Dacca..........	3	0	to	3	4	

The connah varies considerably.

The gain of rearing cotton is about sufficient to allow a bare subsistence to the husbandman, and not much more. In fact, he has no inducement to attempt to get more, for the Zemindar would probably wrest it from him. And this must continue, till such time as settling the largest jumma, and incurring the least balance, shall cease to be the highest point of official reputation; till the demands of government upon the lands shall be known and determined, and that laws shall protect the individual against occasional, partial uncertain attempts to increase the revenue.

The question about the profit of rearing cotton involves the profit of rearing every article produced in the revolving periods, from fallow to fallow, of the agriculture of the country; for as it is a strong shrub it impoverishes the soil greatly, and ought not to be sown two years successively in the same field. It is necessary the ground should lay fallow once in four years. On those lands where cotton grows, the first year the fallow is broken up it is best to sow cungee or teel; the following year cotton. Cotton may be again sown the third year; but it hurts the land too much, and the produce is scanty. After cotton, rice is commonly sown.

The expense of cultivating a connah of ground for cotton,

cotton, on the authority of an intelligent farmer, may be reckoned as follows.

A connah is a parallelogram of twelve nulls in length, and by ten in breadth. Twelve nulls are about one hundred and thirty English feet.

	Cawns of	Cowries.
Rent	5	0
Nine labourers to clean and dress the ground, at eight puns per day	4	8
Seed, three seer, at one cawn per seer ..	3	0
Sowing the seed in rows, eighteen inches wide, each seed four inches apart; seven men one day	3	8
Ridging the earth to the roots of the plants when they are about four inches high; five men	2	8
Breaking the clods; four men	2	0
Weeding four times	10	0
Cotton does not ripen at the same time like grain, but successively, like many fruits; it must therefore be watched attentively and gathered as it ripens. It will require about fifteen days labour	7	8
Cawns	38	0
or A. Rs.	9	8
If the season prove favourable and the soil be good, a connah will yield three maunds, which will now sell for four rupees per maund	12	0
Gain, C. Rs.	2	8

This however, it must be observed, is supposing every person to be hired for the work: but, says the relator, I work myself, my children work and considerably assist

me, and I have some men constantly in my service, so that the loss is less to me than I have stated. On the other hand, there are bad years, and four rupees per maund is a high price for cotton: it has sometimes been as low as two. The price of labour is rated rather high; but labour, since the famine, has risen, and hands sufficient *for the service of the field cannot be procured when the* season is.

The substantial husbandman does not immediately sell his cotton, but stores it, and carries it to the hauts in small quantities, by which he disposes of it to the greatest advantage. The poorer men often receive advances from the mooders, and contract to deliver their cotton, when ripe, at a certain rate less than the market price.

Mode of Culture.

Photee is the produce of an annual shrub, and gathered in the months of April and September: that which is produced in April is most liable to failure, from long drought or from too frequent violent north-westers. Moderate showers are very beneficial to it. The April crop is sown in October or November; the September is sown in April or May, and only upon grounds least liable to be overflowed: it is certain not to suffer drought, and the rains, although in this part of Bengal heavy and continued, do not hurt the crop, in the manner the violent sudden storms do in April.

The seed of the cotton used by the spinners will not grow. The seed for sowing must be kept in the surrounding cotton, and when gathered from the plant well dried in the sun, then put into an earthen pot in which oil or ghee has been kept; the mouth must be carefully stopped. It is thus kept till seed-time.

BENARES.

(Mr. Duncan.)

PRODUCE *of the District,* SORTS, QUALITIES, *and* USES *to which applied.*

SORTS.

There are three grown in this zemindary.

1st. Rarreah or buroweh.

2d. Munnoah or jettooee.

3d. Nurmah.

QUALITY.

The rarreah kupas is of a very good quality and the best produced, as one seer of 80 sicca-weight will give one-fourth of pure ruée, and the first sort of Benares thread is made therefrom.

The nurmah is of an equal quality with the rarreah. It yields the same quantity of ruee and is spun into the same sorts of thread.

The munnoah kupas is neither of so good a quality nor so productive as the rarreah, for one seer of this gives but one-eighth of ruée, and when manufactured into thread produces only the third and fourth sort of that spun in the district.

USES.

The greatest part of the cotton produced in Benares is spun into thread, as the spinners in this quarter prefer such cotton to that from foreign countries. There is also a portion consumed by the natives in the cold season, as they use it in long rezaus, or thick quilts, which they generally wear during that period; as also in purdahs and such like modes. But the principal expenditure in this

this way is of the cotton imported from foreign countries for the consumption of the province, and of which very small quantities are only casually manufactured into thread.

QUANTITIES.

It is supposed about 100,000 begahs of land are annually sown with cotton, which upon an average calculation may produce 130,000 maunds of kupas.

The above calculation is formed as follows:

19,000	begahs sown with rarreah, the produce of each estimated at the medium rate of three maunds of 80 sicca-weight, is	57,000
1000	nurmah, ditto ditto	3,000
80,000	munnoah at 35 seers per begah	70,000
100,000		130,000

The above estimate is formed upon the best and most accurate information that could be obtained from every part of the country, of the general medium produce of the land in a good season. Rarreah and nurmah are always cultivated singly; hence the reason their produce so much exceeds that of the munnoah, with which is sown various other kinds of seeds, as achur, kuddow, janonrah, and sawaun.

		Maunds of kupas.	Maunds of ruée.
Rarreah kupas gives one fourth of ruée, hence		57,000, gives	14,250
Nurmah	ditto	3000	750
Munnoah	one-eighth	70,000	8,750
		Total ruée	23,750

PRICE

Price.

The present medium prices of kupas and ruée in the markets are:

	Ben. Si.	as.		
Of Rarreah kupas, per maund of 80 sicca-weight,	4	8	of ruée	18
Nurmah .... ditto .... ditto	4	8	ditto	18
Munnoah ... ditto .... ditto	2	0	ditto	16

As the price of the ruée bears exactly the same proportion to the rate of kupas which seems to allow nothing for the labour of cleansing, it may be proper to observe that the sale of the husks, seeds, &c., very amply defrays that expense. The seed is used to feed cattle and other purposes.

Benares cotton is this season dearer considerably than usual, as is alleged from the unfavourable season of last year, the rains having set in late in 1788, and also from the drought that took place in October, November, and December, which cramped or kept back the growth of the plants in many places, and hence rendered them less productive than in former years. During the sowing-time, if the rain begin well and the following seasons be commonly propitious, the medium rates are

	Rs.	a.		
Rarreah kupas, per maund of 80 sicca-weight,	3	0	ruée	12
Nurmah ...... ditto ...... ditto	3	0		12
Munnoah ..... ditto ...... ditto	1	4		10

On the other hand, when cotton is reckoned very dear, from unfavourable seasons or otherwise, it is

Rarreah kupas	5	0	ruée	20
Nurmah	5	0		20
Munnoah	2	4		18

At the time of harvest (*viz.* March to June,) the price of cotton is lower than at any other period of the year; in January

January and February it is generally higher, from the stock of the preceding year being nearly expended. Other causes may also tend with this, as in other articles, to cause an occasional fluctuation, such as a greater or less demand, dearness of grain, and the like.

PARTICULARS *respecting the* MODE *of* CULTURE.

The munnoah cotton-seed is sown in the month of Assar (or June), that is in the beginning of the rains; but other seeds are also cultivated with it, such as the ashur, kodow, junowarh, and sawun, as has been before stated. Of these the two latter are reaped about the end of August, that called kodow in November, and the ashur in March; but the munnoah is not taken from the plant till Jeyte (or May), so that it requires near a year to bring it to maturity.

Rarreah is usually sown in this country about the month of Bhadoon (or August); no other seed is cultivated therewith. It comes to perfection in March and April, at which time it is usually reaped. It is not only of a better quality and more productive than that stated in the preceding article, but takes less time in its cultivation; that is, from eight to nine months.

The nurmah is not sown in the fields, but generally round gardens, compounds, &c. It is put into the ground in June, and its plant often rises to the height of eight and ten feet, and when in flower is remarkably handsome. It is also very productive, and frequently continues to yield cotton during a period of four or five years, after which it either dies or becomes barren; but it is generally cultivated more for ornament than use. As the ryots could not afford to sow it in the fields, since it would occupy the same ground for several years and thereby prevent them from putting other productions on it, its

leaves

leaves and branches being so thick as not to admit of a free circulation of air, or of the rays of the sun, to any other grain the ryots might wish to sow among it; hence such grain would never come to its natural perfection, and they would, of course, be losers by attempting it.

The rarreah plant requires a good rich soil, a little elevated, and to be cultivated near a well or a jaut; for about the beginning of December the ryots begin to water it once in four or five days, and continue doing so till the pods are ripe, unless casual showers of rain should render that labour unnecessary. But this sort requires to be regularly *attended to and watered*, otherwise the plant never grows to its proper size, nor does the pod produce its proper quantity of kupas.

The munnoah requires a soil neither too dry nor too wet, and it is generally cultivated in this country along with the articles already specified, in land of an inferior quality to that in which the rarreah is reared. It is not watered like the latter by the ryots, who say it is a hardy plant, nor is any great attention necessary or bestowed upon it. It will grow up well in an indifferent soil, but is usually sown in one of a middling kind.

When the pods of the cotton-plant begin to open and the cotton appears *white*, then the ryots, their wives, their children, and their servants, repair to the fields, and pulling the pod they extract the kupas therefrom. What is thus primarily extracted constitutes the first sort, as being reaped during the proper season, and when the plant is in its full vigour. It is necessary, however, to observe that all the pods do not get ripe at the same time, and therefore remain on the plant till a later season. During this time should any rain fall, it generally gives rise to a worm that then lodges in the pod and feeds on a portion of the cotton contained therein, which gives a yellow

yellow tinge to the remaining part. This therefore, when extracted, is deemed the second sort of kupas. Again, those pods which when ripe fall from the plant on the ground, are beat off therefrom by hail or rain, are gathered by the ryots, and the kupas they yield is considered as the third sort, from its being much mixed with earth, dust, &c, and therefore very difficult to be well cleared and cleansed, in the subsequent operations of separating the cotton from its seed preparatory to its being fit for the spinner.

RENTS *of* LANDS, *Expense of* TILLAGE, *and* PROFIT *yielded from the Cultivation.*

The rarreah is chiefly cultivated by the querús, or poppy cultivators, also by ryots of the Rajpoot and Zunnardar caste; and the munnoah by those of all tribes and classes, as four other articles are always sown therewith.

The rents of rarreah cotton lands are nukdey, or paid in money, and vary from two to six rupees per begah, and these rates are regulated according to the quality of the ground. When the land is very good, the rate is of course high; when of a middling kind, the rent is in proportion; and when under that standard, it is about two or two and a half. And these distinctions are just and proper, since as the best land is most productive, it ought to yield the most to Government; and as an indifferent soil must yield less, so is it equitable that its rent should be assessed according to the quantity it is capable of producing, making an allowance in both cases for the profit the cultivator ought to derive, after liquidating his rent, for his labour and exertions: for if an assessment be made without a view to such consideration, or if the lands be made to pay to Government or the Collector a rent equivalent or even nearly so, to the value of the produce they are

are able under good management to yield, then for a temporary period the Sirkar may get rich, but the ryots will become poor and dispirited, and the consequences in the end become equally injurious to the governing power as oppressive to the industrious ryot.

The rent of the munnoah lands are settled in the mode of battaye (or *in kind*), in common with the other four articles which are cultivated with it. Hence the produce of the munnoah can only be estimated at one-fifth portion of a begah thus sown: but this portion yielded by the munnoah is in general more valuable than any one of the other sort of grain cultivated in the same ground and at the same time, since, upon the exactest estimate that can be now formed, the value of the hakim's share, or one-half the arhur, kodow, janowrah, and sawaun, when reaped is no more than 8 rupees 8 annas, whilst of thirty-five seers of munnoah, the medium rate be produced, this proportion when divided will be that of seventeen-and-a-half seers, which if the selling prices of that article be fixed on the Resident's rubby-neckhnamah for battaye lands, at the rate of two rupees per maund, as they are at this time in the market, will bring him fourteen annas, while all the other four together produce only 1 rupee 8 annas. At this rate the produce of a begah, sown as above, would yield in a year 4 rupees 12 annas, or 2 rupees 6 annas to the hakim and the same to the ryot. But here it must be observed, that in this mode of settling with the ryots for the rent, such rent must be subject to great variations as to its amount, since the produce equally depends on a number of collateral circumstances, such as the quality of the land, the nature of the seasons, the prices of the articles in the markets, and on the quantity of the produce itself, &c. &c.

When the kupas is ready to be extracted from the pods of

of the munnoah plant, and that an estimate is formed of the produce between the aumils and the ryots, and their respective shares adjusted, supposing the whole to be thirty-five seers, or seventeen-and-a-half to each, such produce being divided in equal portions, then the ryot agrees to take the aumil's share, and pays him money for the same according to the fixed or settled pergunna rates of the article in the rubby-neckhnamah, or price-current, issued to every division by the Resident, for the guide of the aumils in respect to the collection of the revenue for the battaye lands.

The estimated profit derived to the ryots from the cultivation of the rarreah cotton is from two to five rupees per begah; and for that of the munnoah sort half-a-rupee to one rupee (independent of what the cultivator of this sort gets from the produce of the other articles sown along with it) per begah. It is obvious, however, a calculation cannot be made, so as to shew exactly the precise gain derived at all seasons and places by the ryots from the culture of this or any other article, while so many casual events may tend to influence both the produce and the prices of it; all that therefore can be done is, to form a judgment as near as the state of things will admit. On this principle the following particulars are founded.

The quantity of rarreah kupas produced in a begah generally varies from two to four maunds, according to the quality of the soil and the nature of the seasons. The following calculation is formed on the medium of three maunds, and the prices stated according to the present rates at Benares.

Rarreah.

Rarreah.

			Rs.	as.
Three maunds rarreah, at 4 rupees 8 annas per maund of 80 siccas			13	0
Deduct:				
The amount of rent to government	5	0		
Expense of watering the plants, kernee or weeding, lernee or extracting the kupas from the pods	4	0		
*Seed	0	2		
			9	2
Remains clear to the ryot			4	6

Munnoah.

A begah yields from twenty to fifty seers; say for the medium thirty-five.

Thirty-five seers munnoah kupas at 2 rupees per maund of 80 siccas			1	12	0
Deduct for the rent the value of one-half the produce being battaye, or			0	14	0
For the lernee or extracting the kupas	2	0			
Seed	0	1			
			0	2	1
Remains profit to the ryot			0	12	0

independent of what he receives from the other articles sown at the same time.

From what has been stated, as well as from what is allowed by the ryots themselves, it is eventually more advantageous for them to cultivate the rarreah than the munnoah cotton: for although the former requires much attention, its cultivation is liable to considerable charges; yet in a good season it amply repays them for their labour, from

from its being more productive, of a better quality, and selling at a higher rate.

In respect to the profit derived from cultivating nurmah cotton-plant or tree, it cannot be stated, as it is (as before stated) not reared in the fields but in gardens, &c. Its quality, however, is equal to that of the rarreah, and is generally sold at the same price.

In two or three pergunnas there are cultivated a very few begahs of a cotton termed hewlee (oolah), but the quantity is too trifling to be noticed as a production of the province. It is chiefly imported from the Vizier's dominions for the consumption of the province, and is of the quality of the rarreah kind.

EXPORTS *of the province of Benares.*

The quantity of kupas exported from the 1st April 1788 to the 31st March 1789, of the produce of Benares, was forty maunds only.

IMPORTS *from other parts.*

The imports from other parts of Benares, for the same periods, were 21,588 maunds.

Of the quantity thus imported, 21.550 was for the immediate consumption of the province, and the remaining 38 maunds were again exported.

The imports were from the undermentioned places and in the following proportions:

From the westward or Vizier's dominions, hewlie kupas	4,809
From the southward, or countries on the southern frontiers, such as Rewah, Murkenpoor, &c.	4,113
From the eastward, or the Honourable Company's provinces, as Shadabad, Siccar, Sawm, &c.	12,628
	21,550

The

The imports into Benares are generally all of the narreah or hewlie sorts, and are expended in this province in the manufacture of thread, as the spinners prefer them to the cotton imported from Nagpore, Jalowan, &c.

EXPORTS *of* RUÉE, *the produce of Benares.*

To the Company's provinces .... 81 maunds.

IMPORTS *of Ruée for Consumption in Benares.*

From the Westward or Vizier's dominions ..	18,046	maunds.
Southward or Deccan	1,500	
Eastward or Company's provinces........	78	
	———	19,624

Imports for immediate Exportation.

From the Southward or Deccan, and exported to the Company's provinces	68,375	
From the Westward, exported to ditto	120,321	
From Southward or Deccan, to Northward	80	
From Northward, and exported to Eastward or Company's provinces	457	
From one part of the Vizier's dominions and exported to another	15	
From Shadabad, and exported by the Ganges to the Eastward or Company's provinces ..	407	
From Westward, and exported to Northward	5,561	
	———	195,216
Total of imports, Ruée		214,840

Abstract of Imports and their Application.

For consumption in the district....................	19,624
For exportation to the Company's provinces........	189,560
To the Northward	5,641
To the Westward	15
	214,840

Prices

Prices of Cotton Imported at Mirzapore in August 1789.

	Rs.	as.				
Nagpore, Benares sicca	20	0	per maund, 97½ siccas to the seer,			
or			16	6	7	of 80 sicca-wt.
Amsootie	18	8	15	2	10	
Hurdeyenugger	17	8	14	5	8	
Jalwan	17	8	14	5	8	
Gohrah	17	4	14	2	5	
Bhenom-ghur	17	8	14	5	8	
Misseerpore	16	12	13	11	10	

The principal part of the exports are of the first assortments. The three former from the Deccan, or southward; and the last from the westward, or through the Vizier's dominions, is produced within fifty coss of Furruckabad, in the aumildarry of the Rajah of Calpee, and very large quantities of it are annually imported for the consumption of the Honourable Company's provinces.

The three latter kinds are only casually imported at Mirzapore. Of these, the Misseerpore is brought in the largest quantities from the westward, that place being in the dominions of the Nabob Vizier; the Gohrah comes from Bundelkund, and that of Bhenom-ghur from the Deccan or southward.

The prices of cotton at Mirzapore vary almost every day. Between the 1st April 1786 and 31st March 1789, the prices of the undermentioned assortments were,

	Rs.	as.		Rs.	as.	Medium of aggregate quantity sold, Mirzapore weight.			Reduced Calcutta weight of 80 Siccas.		
Hurdeyenugger, from	13	2	to	21	0	16	1	9	13	3	5
Jalwan	13	14	to	21	3	17	10	0	14	7	4
Amsootie	12	0	to	19	14	16	4	0	13	5	4
Nagpore	13	12	to	23	6	18	12	0	15	6	2

The

The difference between Mirzapore weight and Calcutta weight is 17s. 8 as. per seer, or per maund 8 seers 12 chks.

The market at Mirzapore is chiefly influenced by the selling rates at Bogwargolub near Moorshedabad, to which large quantities are always exported from this country, and where beoparies or traders from Dacca, Calcutta, &c. usually repair to purchase the article. In proportion, therefore, as the demand there is great, the prices rise at Mirzapore, and so *vice versâ*. The prices during the last twelve months have been very high, said to be owing to the increased demand at Bogwargolub, and indeed all over Bengal, as also to reports that several persons had it in intention to purchase for exportation to China. The prices are also frequently regulated by the quantities imported, as well as by what may be expected to arrive. If the imports exceed their usual amount or the current demand, they fall. The prices are now lower than they were in March and April, owing to reports of one or two ships being arrived at Bengal with a supply of Surat cotton. As the demands on Bengal have increased and are increasing, there is no doubt but the importation will be correspondent thereto, as the trade at Mirzapore is now in a very flourishing state.

QUALITIES *and* USES *of the Imported Cotton.*

Of all the sorts of cotton or ruée imported from other countries, that of Nagpore is held in the highest estimation in respect to quality. It is of a fine grain, and of smoothness and consistency that render it superior to the other sorts, and indeed nearly equal to Surat cotton. The cloth manufactured from the thread of Nagpore cotton is reported to last long and to bear washing well, and it always sells higher than the Jalwar or Amsootie sorts.

 After

After a careful examination, it does not seem that the rarreah or buroweh cotton of the first sort, cultivated in Benares and the neighbouring countries, is much inferior to that of Nagpore; for it not being spun in the district into fine thread, is perhaps more owing to the want of good spinners than to any defect in the inherent quality of the cotton itself. A proof of which is, that the very fine mow-thread is spun from the rarreah or buroweh and nurmah sorts. This is a proof of the goodness of the cotton, and renders evident the policy of increasing its cultivation.

The Amsootie, though inferior to the first sort of Nagpore, is still deemed to be of a very good quality, and capable of yielding in the hands of good spinners fine and even thread; and so are the Heydenagur and Jalwan sorts, though not generally considered to be equal to the Amsootie, nor do they usually yield so high a price.

The Gohrah and Bhenom-ghur assortments are reckoned to be about the same class as to quality as the Jalwar, but no great quantities of these sorts are imported.

The Misseerpore is deemed inferior to the two former, but is sometimes exported to the Company's provinces.

The ruee, the produce of foreign countries, imported for the consumption of the province, is for the most part expended in sermue or habits for the cold season, such as quilted jamahs lined with cotton; also in rezaus, purdahs, behadars, tents of the natives lined with that article, cushions, pillows, and such like uses. The proportion of foreign cotton spun into thread is but small in the district, as the spinners always prefer either the produce of Benares or kupas imported from the neighbouring countries for that purpose; but when it is consumed in that way, it is generally manufactured into the sorts of coarse thread made in the zemindary, and the Nagpore and Amsootie

Amsootie kinds are usually spun into thread of the first and second subdivisions thereof, and the other sorts are expended indiscriminately in the other sorts spun here.

But although in this district the spinners use the foreign cotton only when the produce of the country cannot be easily procured, and manufacture it into coarse thread, it is certain that the Nagpore, Amsootie, &c. are capable in good hands of being spun into very fine and good thread; and from the great quantities exported to the Company's provinces, there is no doubt of its being there manufactured into fine thread.

It has already been stated, that the munnoah produced in this district is not equal to the rarreah in quality, nor is it by any means equally productive or capable of being spun into such good thread. The munnoah feels somewhat hard and rough in the grain in the hand, and has no great adherence or consistency; for when a little of it is pulled asunder or drawn in contrary directions by the fingers, it easily separates or has a natural dryness in it. The cloth manufactured from its thread does not last long, and is soon worn out in washing. This sort is used for lining habits, rezaus, &c. as the natives state that one seer of munnoah yields more warmth when used as lining than two seers of rarreah, and this they place to its inherent dryness above-mentioned.

OBSERVATIONS

UPON

BRAZIL COTTON-WOOL,

FOR

The Information of the Planter, and with a view to its Improvement.

(Published in 1808, 27th June).

1. Previous to the year 1800, Pernambuco cotton was estimated by the British manufacturer, chiefly for the fineness and silkiness of its staple; but at that time a large proportion of it was much reduced in value, by the quantity of stained cotton, as well as leaf, seed, and other kinds of dirt, which it contained.

2. About the period above-mentioned, inspectors appear to have been appointed in that part of the Brazils, for the purpose of remedying the complaints upon these points, and from that time all the cotton from Pernambuco has been greatly improved in cleanness and evenness of colour; but by some mismanagement, the greater part of it has been gradually losing that fine, soft, silky texture, which formerly constituted its principal value, and a large portion of the import for some time past has been comparatively coarse in the staple and less bright in colour.

3. It may therefore be worth while, at our entrance upon the new relations which are likely to subsist between Great Britain and the Portuguese government established at the Brazils, to enquire into the causes of this alteration in the quality of Pernambuco cotton, with a view to the recovery of its former valuable properties, and combining them

them with the improvement which has taken place in cleanness and evenness of colour.

4. The writer of these observations being unacquainted with the interior management of the cotton plantations in Pernambuco, is unable to say how far that part of the change alluded to, which relates to the fineness of the staple, may in any degree be owing to that invariable tendency which all vegetables have to degenerate, by inattention to the essential points of frequently varying and interchanging the seed and the soil: he will therefore deem it sufficient merely to have hinted at the necessity of these requisites being duly attended to, and confine himself to such causes of the change which has taken place in the general properties of this cotton as are more obvious, pointing out what appears to him to be the proper remedies, as he proceeds.

5. The first and most material defect is, the state to which the cotton is reduced by the new mode of cleaning. Formerly (before this mode was adopted) it appeared to have undergone no operation but that of hand-picking, and was therefore, with the exception of being freed from the seed and some part of its other imperfections, sent to market in nearly the state it was gathered from the plant, which is the most favourable state cotton can be in for all manufacturing purposes, as the fibres will then separate with the application of a very small force, and thereby the process of carding (the first which it undergoes, and on the perfection of which all the rest depend) is rendered not only more easy, but much more perfect; whereas, by the new mode of cleaning, whatever it be, the fibres of the cotton are so entangled and matted together, as to produce a degree of stiffness and adhesion particularly unfavourable to the operation in question. It requires double the force in carding to separate the fibres, the effect

effect of which is, to break the staple, and thereby to increase the proportion of waste usually made by the flyings from the cards; and after every degree of skill and attention on the part of the manufacturer, it is at last impossible to separate them so perfectly as to produce in the spinning a fine clear even thread. A further objection to cotton-wool in this state is, the additional stress which it lays upon the machinery, the effects of which are to reduce the quantity of work capable of being produced by a given power, and to increase the wear and tear, which in both cases adds to the expense of the article produced.

6. Upon the subject of colour, the want of that silky brightness which formerly characterized Pernambuco cotton, appears to arise from a part of the stained cotton being in the new mode of management so mixed up and incorporated with the good, as to prevent the possibility of its being afterwards detached, and thence a dingyness of colour is communicated to the whole, besides the essential properties of the staple being injured, in whatever proportion the stained cotton bears to the perfect. Thus it is that all the Pernambuco cotton, to which these objections apply, is reduced, in point of value to the manufacturer, to nearly the scale of the inferior sorts, such as Surinam, Demerara, &c. namely, two-pence, three-pence, and four-pence per pound, it being, for the reasons before-mentioned, inapplicable to the finer branches of manufacture or to any purpose for which the above sorts are not nearly as well calculated.

7. To obviate these leading defects, it is recommended that, in gathering the crop, particular care be taken to keep the stained and dirty cotton separate from the more perfect; which may be done, for the most part, by each labourer having two bags (or such other vessel as there

may

may be in use), one for the stained and inferior, the other for the good cotton, in order by preventing their being mixed in the first instance, to avoid the necessity of any of those operations in cleaning, which produce that adhesion of the fibres, and that defect in the colour so generally complained of. It is then recommended, that the prime part of the crop should, as far as the state of labour will admit, and after the seed has been carefully separated, be finally cleaned and prepared for the bag by hand-picking only, without the use of sticks to beat or shake out the dirt (called by the West India planters switching), or any other machinery whatever, it being in this stage that the mischief complained of (no doubt) takes place.

8. A due attention to these particulars would materially increase the value of the principal part of the crop, and would probably bring some of the finest marks into competition with Sea Island Georgia, which would produce a further advantage upon such marks of one penny to three-pence per pound; and it is suggested that the stained and inferior cotton, after having undergone as much cleansing as circumstances will admit, would always find a market in England, at a price which would probably more than reimburse the planter for the extra labour bestowed upon the first quality. It is scarcely necessary to remark, that the practicability of what is here recommended must depend greatly upon especial care being taken, that in separating the seeds from the cotton they be not broken, and thereby mixed with the wool, which, whenever it happens, must necessarily render the process of hand-picking tedious and expensive.

9. After what has been said relative to Pernambuco, it cannot be needful to advert so particularly to the other sorts of Brazil cotton: it will be sufficient to point out their

their faults, and refer to the management recommended above for the remedy.

10. Maranham has, of late years, been for the most part coarse in the staple and dirty, and the dirt so incorporated with the wool as to be difficult and expensive to separate.

11. Bahia cotton has retained its properties better than the two former sorts; but its faults always were, and still are, a great deficiency in colour, owing to the stained cotton not being taken out, and many bags having much whole seeds, leaf, and other kinds of dirt in them, which admit of an easy remedy, by the mode suggested of gathering the stained cotton separately from the good, in the first instance; and as the pernicious method of cleaning adopted in Pernambuco does not appear to be in use at Bahia, this cotton would then come to market in the state approved by the British manufacturer.

12. The writer being anxious to be fully understood, will here repeat that the great principle of what he wishes to recommend is, that after the cotton is gathered from the plant, and the seed carefully separated, the prime part of the crop should undergo as little other change from the state it is in when gathered, as is consistent with its being bagged perfectly clean, as every process beyond that of hand-picking has an unavoidable tendency so to connect the fibres as to make them difficult of separation, and also to deprive the cotton of that bright silky appearance, which formerly was the distinguishing character of the Brazil cotton-wool. He will also repeat the recommendation, that the stained and inferior part of the crop be rendered as clean as the state of labour will admit, and sent to market under a separate mark or title; and will conclude by requesting the planter always to bear in mind, that the difference in price, in the British market,

between

between coarse and fine, clean and dirty cotton, falls wholly upon himself, the duty, freight, and all other charges (commission excepted), being upon the weight or package, and not *ad valorem*.

(Signed) Roger Hunt.

London,
27th June 1808.

Subsequent Remarks by Mr. R. Hunt.

(1808).

The above remarks upon Pernambuco cotton apply with still greater force to nearly the whole of the import from Surinam, the mode of cleaning which (judging from the state of the cotton) must be still more objectionable than that used in Brazil, most of the Surinam of late years possessing not only a more tenacious adherence of the fibres, but the staple being actually *broken*, apparently by some kind of machinery introduced to supersede the necessity of hand-picking (probably the gin used in America). This will account to the Surinam planter for that gradual approximation in price between Surinam and New Orleans cotton, which has been taking place for some years past, not from any improvement in the latter, but by the former being reduced in value, by the mode of cleaning, at least two-pence to three-pence per pound. It may be observed that *colour* is not a subject of complaint in Surinam cotton, which for the most part is more perfect in that respect than any other sort.

Nearly the whole of the Demerara and Berbice planters appear, of late years, wisely to have abandoned the injurious practice of *switching* their cotton, and it now only remains for them, by the method herewith recommended, to divest it of the stain and dirt, which is more or

or less a subject of just complaint against the greater part of what *now* comes from these colonies. Such marks as have come clean and even coloured since the practice complained of has been discontinued, have generally sold higher than the best Surinam, and in some instances at the price of Pernambuco.

DIRECTIONS

FOR THE

CULTURE of COTTON in AFRICA.

(Printed by the African Society after Mr. R. Hunt's Publication of 1808.)

Cotton grows in any soil that is not overmoist. The common opinion however, that it flourishes most in barren or impoverished land is erroneous. It will doubtless grow in thin arid soils not exhausted by previous cultivation, yet there cannot be a doubt that it will prove more productive in good or middling land, consisting of a loose dry mould free from clay or marl. If the inclination of the land be sufficient to carry off the water, the labour of trenching and draining which is necessary in level lands will be saved. As no plant requires so little rain as cotton, the close vicinity of high mountains is injurious to it, while it is beneficial to the coffee. On the other hand, the saline air of the sea-shore, which generally destroys coffee, is favourable to cotton.

The land for cotton must be cleared in the dry season, and the operation should commence in sufficient time to allow the wood and brush which have been cut down to dry, so as to be burned before the rains set in. The process of cleaning need not be described. It would, however, be a great improvement of the method which prevails in Africa, if the underwood and small wood were grubbed out, and the large wood were not only cut down, but its branches lopped off, and its trunk also cut into such logs as may be easily removed and heaped together for

for burning. The more completely the ground is cleared, the more productive is the cotton likely to be. It certainly, however, would not answer to grub out the larger stumps and roots; they must be left to rot, which they would do in a few years.

In situations where the rains are not violent, the cotton-seed is generally put into the ground at the early part of the rainy season. But in places differently circumstanced, this operation is deferred till the rains are within a month or two of their termination, with a view both to guard against an over-luxuriant vegetation, whereby the plants might exhaust their strength in branches and leaves, and to avoid the injurious consequences of rain at the time the blossoms are appearing and the pods forming. In Africa, the best time for planting the seed must be regulated by experience, and by the result of experiments to be made at all seasons, from March to September; but the earlier the seed can *safely* be sown the better.

In Georgia and Carolina, considerable labour is bestowed in ploughing and harrowing the ground, and forming ridges raised pretty high with trenches between. This, no doubt, assists vegetation, and at the same time serves to carry off the water from the flat lands. The same thing is done, though less carefully, with hoes in Demarara and Berbice, but it is seldom done in the West India Islands. There, however, the fields are regularly laid out and the holes opened in straight lines. The distance between the holes varies from five feet in poor soils, to eight feet in rich soils. The holes are made by loosening the earth for about eight or ten inches or a foot square, and five or six inches deep.

From six to fifteen seeds, spread longitudinally, may be put into each hole, and covered over lightly with earth, not above one or two inches deep at most. The more

moist

moist the ground is the more lightly should the seed be covered, otherwise it will be apt to rot. The plants will generally show themselves in from five to nine days, but sometimes not before fourteen. When they have four distinct leaves, half the number in each hole may be drawn, and these must afterwards be gradually reduced until one, and that the most vigorous and healthy plant is left in each hole.

For the first six weeks the plants are of slow growth and very tender, and they must be carefully kept clear of weeds until they become of a sufficient size to suppress all extraneous growth. It would be of great service, also, that the earth should be occasionally drawn up about the roots until the blossoms appear, when this operation is no longer necessary. At the end of six weeks, if not before, the plants if luxuriant ought be topped or pruned, by breaking or cutting off an inch or more from the end of each shoot, which makes the stems spread and throw out a greater number of branches: and this operation, if the plants are very luxuriant, will require to be performed a second, or even a third time, with a knife, on the stem and branches.

The blossoms generally appear in about eighty days after the seed has been planted, and sometimes later, and the first pods arrive at maturity in about three months from that time. The blossom of the green seed when it first appears, which is generally in the morning, is white, and remains of that colour for the first twelve hours; but it changes the following night to a beautiful crimson, and drops off within thirty-six hours of its first appearance. That of the black seed, or Sea Island, undergoes the same change with the green, but when it comes out it is of a deep yellow colour.

The cotton should be fully blown before it is picked. This

This may be ascertained by its separating *easily* from the pod or husk. When it adheres to the pod and must be forced from it, the cotton will be of an inferior quality. Great care should be taken to gather it as free from trash or dirt of any kind as possible, which will save much trouble afterwards in the cleaning. Cotton ought not to be picked after rain or while wet, as in that case it will be stained and of little value.

In gathering the crop, particular care should be taken to keep the stained and dirty cotton separate from the more perfect, which may be done by each labourer having two bags, one for the stained or inferior, the other for the good cotton. The value of the latter would be greatly increased, and even the inferior would always find a market in England.

The next operation is that of separating the cotton-wool from the seed. Of all the modes of effecting this, *hand-picking* is doubtless the best, because the most favourable state in which cotton can be for all manufacturing purposes, is, with the exception of being freed from the seed, that in which it is gathered from the plant. Whatever serves to entangle or mat the fibres is injurious, because when matted, they require in carding a greater force to separate them; and the effect of this is to break the staple, and otherwise to produce waste and inconvenience to the manufacturer; besides which, a fine, clear, even thread, can hardly ever be produced from matted cotton.

The process of separating the seed from the cotton-wool by the hand is in general attended with so much expense as to be impracticable; though in Africa, perhaps, from the cheapness of labour, the difficulty may be less. Machines have therefore been substituted for this purpose, called gins, of which the common foot-gin is probably at present the best for Africa.

There

There is another kind, calculated to work by cattle, wind, or water, which may hereafter be produced with advantage, but would be found too expensive and complicated at first.

The black seed being loosely attached to the wool, is easily separated by the gin without injury to the staple.

The green seed, on the contrary, adheres so closely to the wool that it can only be separated by a saw-gin, which cuts the staple and depreciates the cotton one-half, but if *hand-picked* it would be more valuable.

The green seed is more productive than the black, but the wool of the latter is of considerably higher value.

It is hardly necessary to observe that, that mode of ginning is to be preferred, which tends least to break the seeds and entangle the fibres of the cotton.

After the cotton has been ginned, it should be carefully examined and freed from all motes, broken seeds, stained wool, &c. as its value in Europe much depends upon the condition in which it is packed. The usual mode of packing is this. A bag is suspended through a round hole in the floor of the cotton-house, its mouth having been previously distended by a hoop. Into this bag the cotton is thrown by small quantities, and pressed down by a stout man standing in the bag with a pretty heavy pestle of hard wood. From two hundred weight and a half to two hundred weight and three-quarters, should be compressed into five yards of bagging.

In America, four acres of cotton and four acres of provision are generally the proportion planted for each labourer, and which therefore each labourer is capable of managing. To pick fifty pounds of cotton in a day is considered as a fair task for one person.

The plants should be cut down every year, within three or four inches of the ground. The time for doing this, which

which must be in the rainy season, ought to be regulated by the same circumstances which regulate the planting of the seed at first, and that the subsequent management, in this case, will also be the same as has already been pointed out in the case of the plants from the seed.

It would be a great advantage, if every third, fourth, or fifth year at farthest, the plants were to be grubbed out, and their place supplied by means of fresh seed brought from a distance. This would prevent the cotton from degenerating, which it never fails to do when it has been propagated in the same ground for many years without a change of seed; and would, of course, preserve its quality and maintain its reputation in the European market. Great care should be taken to prevent a mixture of the different kinds of seed in planting: each kind should be kept perfectly distinct.

The process called *switching*, or beating the dirt out of cotton by means of sticks, ought if possible never to be resorted to. The necessity of having recourse to this expedient, which can only arise from previous negligence, ought to be obviated by the means already pointed out; it deteriorates the quality, and consequently lowers the price of the cotton.

In the gathering and hand-picking, and even ginning of cotton, great use may be made both of young children and infirm people, who are incapable of exertion of any other kind.

REMARKS

ON THE

CULTURE OF COTTON

At the ISLAND of BOURBON.

EXTRACT *Bombay Commercial Consultations*, 15*th October* 1811.

The cultivation of this valuable plant in this colony is of recent date, and has only been followed since the years 1788 and 1789. Unfortunately various causes soon deprived us of a branch of commerce, of which the greatest hopes were entertained, and of which the success was to carry the prosperity of Bourbon to the highest pitch.

The great returns of the cotton-trees were of short duration. Towards the year 1796 the plant began to degenerate, and a greater quantity of cotton was produced of a yellow than a white colour. This was at first attributed to a want of rain, and afterwards to the impoverishment of the soil. But observations and experience have since shewn, that the cotton, shortly after flowering, was pierced by an insect which deposited its eggs in it; for in the yellow cotton a blemish is constantly found, apparently caused by the animal, which alters the colour of the wool, and occasions its appearance before the time required by the nature of the plant.

At present this culture is little attended to, and is almost given up in the districts where it succeeds best. In those where it is still followed the returns are very small, owing to the great quantity of yellow cotton, which it is necessary to separate carefully from the white, thereby increasing the work and trouble.

To render an exact statement of what regards the culture of cotton, it is necessary to consider the topographical situation

situation of this island; which is of a circular form, elevated and placed under the tropics.

The climate of that section of the island exposed to the trade winds must necessarily differ from that of the part which happens to be sheltered from them. It may easily be conceived, that the clouds, impelled by the wind, must more particularly dissolve on the part they first reach, and that attracted by the mountains, they must there pour forth the greater part of the water contained in them; so that the section of the island situated beyond those mountains must have less rain than that which receives the first shock of the breeze and the first encounter of the clouds. This is what actually takes place, and the part of the island exposed to the breeze is watered beyond its wants.

The summer, or rainy season, only differs there from the winter, or dry season, because there falls then a greater quantity of rain. It is easy to conceive besides, that in the sheltered part, or to leeward, the grounds must be watered according to their situations, where nearer or farther removed from the mountains. If afterwards it be considered, that over the whole island, the ground rises gradually from the shore to the height of 1,000, 1,200, and 1,400, and even 1,600 toises above the level of the sea, it will be felt, that generally the highest parts are the most watered; that throughout the whole island the farther you go from the shore the more rain and cold you meet with; that the south-east, and east, and south parts, are the most rainy, and the cantons north-west, north, and west, are the most dry. This is actually the case with some trifling exceptions. It results from these facts, that one cannot move round the island, or from the sea-shore to the top of the mountains, without constantly changing climate, air, and temperature.

Remarks

Remarks on the Culture of Cotton and on its different Species.

Cotton seems to thrive best in warm low grounds: too much rain is hurtful to it, not only because excess of vegetation prevents the tree from producing so great a number of pods, but also from the injury sustained by the wool from the wet.

Although, in general, the cotton-trees of this colony have never been further from the sea-shore than a league or a league and a quarter, this preference is not to be attributed to the vicinity of the sea, but rather to the difference of climate and temperature of which I have spoken, and which varies according to the degree of elevation. Besides, observation upon plants prove sufficiently, that they have all a region which suits them best, and that many produce nothing out of their own climate. For example, cotton-trees have never been cultivated from the river Diesmal to the river Dabood, going from west to east and from east to south-east, because in all this part the rains are too frequent. Strong grounds suit cotton pretty well, and it succeeds tolerably well also on sloping grounds. Flat, free, and too rich soils, particularly those which retain humidity, have been found little suited to this culture. The shrub flourishes luxuriantly, the leaves and pods become formed, the former are large and of a dark green, but the tree produces little fruit. These observations are often made at Bourbon where the nature of the soil is much varied.

Sandy mixed grounds of vegetable earths are very proper for the culture of cotton: it thrives there admirably, supports droughts easily and lives to a great age; although harassed by the axe, storms, and bad weeds. One

One even sees in the same plant, one stem give way to the injuries of time and another survive.

The general opinion is, that cotton has degenerated. This opinion is founded on these trees having no longer either the same beauty or the same size. Some cultivators of the Isle of France, where for a dozen years past this culture has been more attended to, confirm this decay, admitting it partly to proceed from the impoverishment of the soil, occasioned by time, and by the mode of culture, which evidently appears to be prejudicial to it. It is to be observed, that formerly it was customary to plant the cotton-trees at two feet distance, and now they are planted three, and even twelve feet asunder. Opinions are much divided as to the advantage or necessity of pruning the cotton-trees every year. This operation generally takes place in October and November. October is preferable, because in November the rains often cause the sap to ascend. At Bourbon they are commonly cut every year: at the Mauritius, on the contrary, they are only pruned every third or fourth year, and some never cut them at all. I could not take upon myself to decide between these different opinions. Perhaps at the Mauritius the low price of grounds is the cause they do not try to make the most of them; instead of which at Bourbon, by cutting the cotton-trees they have the advantage of planting maize between the rows. It may be inferred from hence, that the difference between each method is not very great, since it produces results differing so little from each other.

There exists also another idea, respecting which opinions are similarly divided. Here the inhabitants pretend that the cotton-tree only produces a third slight return at the end of the third year, and still less the fourth: this I have myself witnessed. It is inferred from thence,

that

that the plantations ought to be renewed (an easy operation), by planting in the rows commonly intended for maize. The approved custom at the Isle of France is to prune the trees.

The third year would appear to favour this opinion, although the cotton-trees live there from ten to twelve years. Having had no experience on this subject, I will not take upon myself to decide between the two methods, but I am inclined to prefer that of Bourbon.

It is a common saying at Bourbon, "no esquine no cotton." This assertion is well founded, for a few years since the esquine has given place to a very thick kind of dog-grass, of which the fibres multiplying to excess necessarily smother those of the cotton-trees.

The branches of the dog-grass are covered with small brittle leaves, which the wind takes off, and which stick to the husks of the cotton. If the husk fall it is soiled by these bits of grass, which increases the trouble of cleaning. The esquine, on the contrary, has a smooth elevated stem. Its leaves do not come off, and its flower is neither in a branch downy or bearded, inconveniences which are found in many herbs from which it is necessary to cleanse the cotton-tree. Its roots are remarkable, inasmuch as they do not extend beyond an inch, so that they cannot in the least incommode those of the cotton-tree. In fine, the esquine has the advantage of forming a carpet, which covers the soil and protects it from the heat of the sun, and receives the husks which fall without soiling them. We have also at Bourbon the custom of planting peas in the cotton-grounds, which offer the same advantages as th esquine, and moreover procure a useful pulse in domestic economy.

The crop obtained at the end of nine months is very scanty,

scanty, and scarcely one-third of what the tree produces at eighteen months or two years; but the third year the produce is little more than one-half of that obtained at the end of eighteen months. Two crops are generally made in the year. The first is (if I may use the expression) a mere gleaning, and takes place about the month of May, but the great crop is from July to September; and it appears that they gather in the month of December, when the cotton is ripe; but at this time rains are to be apprehended. Wet wool curls, loses its brightness, and is often entirely spoiled: it is on this account that the cotton should always be gathered as soon as it begins to ripen.

Some cultivators have observed, that the cotton gathered on trees which have attained their third year, gives at the most, after it has been milled, one quarter of its gross weight; whereas that from the trees of eighteen months or two years gives about one-third.

At Bourbon they cultivate two kinds of cotton; one with a black smooth seed, easy to detach from the wool, and for this reason most esteemed. It results from this property, that the milling and cleaning are quicker, for crushed seed forms the principal dirt of the milled cotton. The silk of the cotton with black and smooth seed is inferior to that with white seed. This last kind is softer and more delicate; the difference is perceivable to the touch: the other is more rough, and gives way less easily under the pressure of the hand. But the cotton with white seed is much more difficult to cleanse from it. The work of milling is longer, because the silks adhering to the seed on all sides, can only be separated by tearing, and it is this which gives it a white shade. Besides this difficulty, a great quantity of seeds are drawn between the cylinders and crushed; which greatly in-

creases

creases the work of the people employed. In the kind with black smooth seed, the grain does not appear to be enclosed by the wool; therefore it is only necessary to loosen it, and it falls, as one may say, of itself. These two species seem not to differ in the appearance of the tree or flower, and cultivators only distinguish them by the seed, and both kinds are sometimes found upon the same plant.

Cotton Plantations.

In the driest part of the island leeward, they plant the cotton-tree about the month of November. At this time the grounds are generally free of every kind of weeds remaining of the preceding rainy season. If the ground be fallow, it is necessary before planting to grub it up and free it entirely of the roots that lie deep. This ought to be done some time before, in order that the roots which may be left may have time to rot.

There are many advantages attending the plantation of cotton-trees by the line. That of preserving a suitable distance between each plant, so that they cannot obstruct each other by their roots or branches. The replacing the rotten seed, or that destroyed by insects, becomes easier, and the labour which the plant requires is more quickly performed, and better superintended by the proprietor or his delegates, who can assign to each workman his task and make him responsible for the performance of his duties. In fine, when it is requisite to renew the plantation, the rows render this operation easy, and even advantageous to the new plant. The seed may be sown even when there has been no rain. A slight blow of a pick-axe is sufficient to make the hole where it is to be deposited; but great care must be taken that there be no stone at the bottom, which might incommode the roots, or heating by the

the rays of the sun, expose the young plant to all the inconveniences of a drought until the setting in of the rains. The holes are generally made seven, eight, or nine feet asunder. I think seven sufficient, particularly if, as is commonly done in this island, the trees be pruned every year. Those who pursue the contrary method may plant them at a greater distance.

Some people are satisfied with throwing the seeds into the holes and leaving it to the wind to cover them; others cover them over. This last is the preferable method, does not increa e the trouble, and is absolutely necessary in particular cases; nevertheless, never more than half an inch deep of earth should be thrown over. In that part of the island where the breeze blows strongest and rain more plentiful in winter, cotton may be planted all the year round. It puts forth and vegetates during winter, but it grows very rapidly on the opening of summer. Then it is necessary to cover up the seed, for in spite of the humidity of the soil, the breezes and sun might so dry up the earth, that the grain which might have been sufficiently moistened to make it swell, might not have been sufficiently so to shoot forth: it would not, and it would be necessary to replace it. To avoid these inconveniences, aud to make up for the seed which may have been crushed by the milling, it is usual to throw ten or fifteen grains in each hole. It does not appear that the seed is attacked by any insect previous to its shooting forth. Those who wish to make the most of their grounds plant maize (zeá) between the rows of cotton-trees. This practice is advantageous, as the slight damage which the shrub experiences, and the smallness of the first crop, are amply made up by the return in maize. The cotton-tree should be planted at the same time with the maize and after heavy rains, otherwise it might incommode it by its rapid growth without

experiencing

experiencing less harm. The flower of the maize causes the leaves of the cotton-tree to turn yellow, and stops its vegetation for some time. Some plant peas between the rows, to prevent the sun and breeze, and even the cotton-tree itself, from drying up the soil.

When the cotton-plant has reached the height of an inch, and the seminal leaves have generally made their appearance, it is necessary to inspect the rows, to replace the seed in those holes where this may not have taken place. When the plants are three inches high, the number in each hole must be reduced to two; unless it be apprehended that either of the two may die, then three or four should be left. Whilst the plant is young great care must be taken to keep it clear of weeds, that it may not be impeded in its growth. If the cotton-tree has been planted in November or December, it bears in six or eight months; if in winter, it is more backward, and only produces in May or June. Until that time it requires nothing more than clearing from weeds. Its greatest produce is at eighteen months or two years. It is gathered between the months of June, August, and September. It has been known to produce a few pods in October and November, and some trees have sometimes after their great crop, given a small one in the month of May following; but at this period, as after September, it is a mere gleaning. When the cotton-tree is in its greatest vigour the weeds do not appear to affect it much. At the Isle of France the inhabitants encourage in their plantations the growth of a plant known by the name of esquine, which they hold in great esteem, because its roots do not strike deep and therefore cannot hurt those of the cotton, nor is there any thing in its flower or seed which can adhere to the wool. It smothers all other weeds, covers the soil in such a manner as to protect the wool from the dust, and

and receives the pods when they are full. I prefer, therefore, the method of encouraging the esquine to leaving the soil bare. It is customary at Bourbon to prune the cotton-trees eighteen inches from the ground a month or two before the rains. Formerly the shrub was allowed to remain eight or ten years without being replaced; but some pretend it ought to be done every third year, which is done, as already mentioned, between the rows where the soil must be left exhausted.

Cultivation of Cotton.

As the rains commence in October and November, those months are generally chosen for planting cotton.

The plantations, however, can be formed as late as January in all parts of the island, but must not be neglected longer where the violence of the rains ceases in March, because the plant will not have acquired strength sufficient to support the droughts at the time they set in. In those districts where rain is more frequent, they may plant at all times; but the seed sown in winter thrives more slowly, and languishes till the beginning of the heats and rains. It may also be sown in dry weather. It remains in the earth without injury or annoyance from insects till it begins to vegetate when the rains fall.

Plantations in lines are to be preferred, because they are more easily hoed and gathered, and afford greater facility in inspecting the workmen. The ordinary distance is six feet by five; some plant at three by two. It is in this interval that the Indian corn is sown at the same time with the cotton: it does not receive any injury from the neighbourhood of the corn, but on the contrary, is hurtful to it. The holes for the cotton ought not to be very deep, and when it is sown without rain, eight or nine seeds are thrown into each without covering; but on the first

first shower it is necessary to throw over them half an inch, or at most an inch deep of earth.

As soon as the two seminal leaves make their appearance, the plantations should be examined, and those seeds replaced which have not vegetated. Three weeks after the cotton-ground should be cleaned, only leaving in each hole two or three of the strongest plants, near which the earth should be opened and a little heaped up around each shoot. Care must be taken that the ground be kept clean and free from weeds, until the cotton-tree be six months old, after which the great crop being over no further trouble need be taken.

At Bourbon, about the month of April, the cotton-tree begins to shed its leaves. This fall preceeds the blossoming; fifty days after which the gathering begins. The blossoming varies from a month to a month and a half; but, in general, the earlier it takes place the more abundant is the crop. The earth should not be hoed when the pod begins to open, lest the dust should soil the wool.

With the gathering commence the most laborious and nicest part of the business, and it often happens that, at the very moment the cultivator hopes to reap the reward of his labours, a shower of rain destroys it altogether, or very much diminishes his profit.

The line plantation is then of the greatest advantage. Each workman goes along in a row, and picks up all he can to the right and to the left. When the cotton arrives at maturity, the pod opens and the wool appears. It is taken about the middle, and it easily loosens from the pod to which it adhered. Care must be taken that the pod does not touch the plant or the weeds, because the dirt which might adhere to the cotton would much augment the trouble of cleaning it. The bags or baskets into which

which the cotton is gathered should be perfectly clean, and applied solely to that purpose.

The quantity that is gathered depends upon the bearing of the trees. The most that an experienced workman can collect is forty-five pounds per diem. When it is cleaned at the time of gathering, thirty pounds may be reckoned a very good day's work. If it be wished that each black should clean what he gathers, he should be furnished with a basket and a bag, or two bags. They ought to cease gathering at two or three o'clock and commence cleaning. The workman then places before him a basket or bag, and spreads upon the back of the other a little of the wool, which he cleanses from dirt, such as earth, straws, insects, &c., and above all separates the yellow cotton from the white. I have already mentioned, that the alteration in the colour of the wool is caused by an insect. Yellow cotton is the principal thing necessary to cleanse the white from. Those years in which little of it is found are always the most productive and the labour sooner over. Cotton thus gathered should be put in a clean warehouse, but it is more advantageous to clean it beforehand: this operation would be much more difficult after milling. If it be feared that mice may get amongst it, it should be prepared immediately, lest those animals should soil it with their dirt, in chewing it for their nests, or feeding on the seed, the oil of which stains the wool.

Cylinder-mills are mostly made use of to separate the seeds from the wool. At one end is a trendle, to which is affixed a cord fastened at the extremity of the machine. The cord doubled passes over a piece of wood about three inches long attached to one of the bars of a wheel, in the middle of which is a wooden cylinder, above which is placed another, at the distance of only two or three lines, which is attached to another wheel opposed to the first. The

The two wheels are vertical and move in contrary directions, so that which is to the left of the workman turns inwards and the other outwards. The workman resting on a little table about the height of the cylinder, places the pod on it, and the wool is immediately drawn from it and falls into a box ready to receive it: the seed not being able to pass remains on the other side. After this operation the workmen clean the wool for the first time.

A workman can easily give forty pounds gross weight in a day: some workmen would finish by noon and give as far as ninety pounds.

The ordinary work is, from forty-six to fifty-six pounds, which gives from eleven to fourteen pounds nett. The cylinders are made of a fibrous, hard, and close-grained wood. Iron cylinders are sometimes substituted, to preclude the necessity of constant repairs, which the wooden ones continually require; but it has been discovered that they cut the wool. In fine, when iron cylinders are used, the room is more filled with particles of cotton than with the wooden ones. It is of great consequence for the quality of the cotton that it should be cleaned as soon as the seeds have been extracted, otherwise the seeds crushed by the cylinders that might have passed through them would stain the wool.

To clean it, it should either be placed on a mat or rattan frame, and struck with a switch. This operation opens and raises the cotton, and renders it easier to distinguish any particles of dirt which may have got in.

It ought not, however, to be done too much, lest it should cut the silk and spoil it entirely.

An experienced workman can easily pick in a day what another mills, if the cotton has been cleaned in gathering.

QUESTIONS

REFERRED TO

COMMERCIAL RESIDENTS and COLLECTORS of REVENUE.

(Extract from the proceedings of the Madras Board of Trade, dated Fort St. George, 23rd July 1812.)

With a view of ascertaining the real resources of the Peninsula in the article of cotton, and of affording the means of determining on the expediency of generally extending the cultivation of cotton, both for China and England, the Board consider it advisable to require reports from Commercial Residents on the following points, and to apply to Government, requesting the assistance of the Revenue Collectors in each district, to afford all the information they may possess or can obtain on the subject.

Is cotton cultivated, and to what extent, in the district of ——— ?

Is there any import and export of the article from the district?

What is the usual price per candy of five hundred pounds?

What is the time of sowing and plucking, and what the usual mode of cultivation?

Is Bourbon cotton cultivated in the district? Does it grow as luxuriantly, and is it as productive as cotton indigenous of the soil?

Is the soil of the district generally calculated for the growth of cotton?

What is the rent of land capable of producing cotton?

What

What is the aggregate expense of the cultivation?

If the soil is favourable to the growth of cotton, what is the best mode of encouraging and extending its cultivation?

Would the ryots be willing to undertake the cultivation of Bourbon or Tinnevelly cotton on the following, or on what conditions?

1. That the Company furnish the seed and make an advance of one-third of the estimated value of the produce of the land engaged to be cultivated.

2. That a further third be paid when the plant is well up, and the remaining third on the delivery of the produce. The price to be fixed either at the time of engaging with the cultivators, or by the market price at the time of delivery.

Samples (weighing three hundred pounds each) of the cotton produced in the district to be furnished to the Board of Trade.

ABSTRACT of ANSWERS.

By the Commercial Residents and Collectors to the foregoing Queries, in 1814.

GANJAM.

1. Cotton is cultivated in Ganjam to the extent of from eighty to one hundred thousand maunds, including seeds.

2. The import and export of the article is so trifling as to be unworthy of notice.

3. The price is about twenty rupees per candy of five hundred pounds, including seeds; eighty rupees without seeds.

4. The seeds are sown generally in the month of December,

December, and the cotton is plucked in June or July. The ground should be ploughed from seven to twelve times before sowing, and several times while the plant is coming to perfection, to root out the weeds and grass.

5. Bourbon cotton-seeds have never been sown.

6. The soil is, generally speaking, calculated for the growth of country cotton.

7. The rent of the land is from one to one and a half rupee per burnum.

8. The expenses of cultivation amount to three rupees six annas per burnum.

9. The best mode of extending the cultivation would be by giving advances.

10. The ryots would agree to cultivate Bourbon cotton on the conditions specified; but as it is impossible to say whether it would answer, a small quantity only should be sent at first, by way of experiment.

VIZAGAPATAM.

1. Cotton is cultivated in this district to the extent of about three thousand uncleaned candies annually.

2. The import is very considerable, the export small.

3. The price is from twenty to thirty rupees per candy of five hundred pounds with seed, and from eighty to one hundred and twenty rupees per candy without seed.

4. The time for sowing commences the latter end of May in some parts, and in June in other places. September and October are the months for plucking. The land should be well manured, and when the plant appears the ground should be hoed, until the plants are sufficiently advanced to admit of the use of the plough.

5. Bourbon cotton was recently cultivated at Vizianagarum, but was not very productive.

6. The

6. The soil in most of the zemindaries is calculated for the growth of cotton.

7. The rent of such land is from eight to ten rupees per vissum.

8. The expense of cultivation is from ten to twenty rupees per vissum.

9. The best mode of encouraging the cultivation of cotton would be, by the offer of a small increase on the present prices and by making advances.

10. The renters of Vizianagarum are willing to cultivate Bourbon cotton at the rate of forty-five rupees per candy of five hundred pounds, the Company furnishing the seed the first year.

Zillah of RAJAHMUNDRY, *including the Factories of Ingoram and Maddepollam.*

1. Cotton is cultivated in the zillah of Rajahmundry to the extent of eight hundred and twenty-nine candies.

2. It does not appear that the import or export of the article are carried to any extent.

3. It is sold at five or six pagodas per candy of five hundred pounds with the seed.

4. The sowing commences in June and July, the plucking in March and April.

5. Bourbon cotton is not cultivated.

6. The soil is partially calculated for the growth of cotton.

7. The rent of the land is from ten to fifteen pagodas per candy.

8. The expenses of cultivation will be about one and a half or two pagodas per candy.

9. The best mode of encouraging cultivation of the cotton is by making advances.

10. It is presumed the ryots will undertake the cultivation of Bourbon cotton.

MASULIPATAM.

1. Cotton is cultivated in this district, but has been confined to particular zemindaries.

2. It is exported to the eastward.

3. The price is four pagodas per candy with seeds, and fourteen Madras pagodas without seeds.

4. The time of sowing is August and March, and April the time of harvest.

5. Bourbon cotton is not cultivated in this district.

6. The soil is favourable in some parts for the cultivation of cotton.

7. The rent of land producing cotton is from sixteen to thirty-two pagodas per cutchill.

8. The expense of cultivation amounts to from fifty-six to one hundred rupees per cutchill.

9. The best mode of encouraging the cultivation would be by making advances to the ryots.

10. The ryots will not undertake to cultivate either Bourbon or Tinnevelly cotton.*

GUNTOOR.

1. In the district of Palnund 3041 candies 19 maunds 3 vis of cotton were produced in 1812.

2. In the same year 2582 candies were exported to the Nirzam's dominions and some sent to Madras for sale.

3. The price of a candy of cotton is from twelve to fifteen Madras pagodas.

4. The seed is sown in the end of August or beginning of September, and the cotton is plucked in the beginning of January.

5. Bourbon cotton is not cultivated.

6. The

6. The soil is particularly well calculated for the growth of cotton.

7. The rent of land producing cotton is from five to twenty-four Madras pagodas per cutchill.

8. The ryot receives half the produce, and furnishes plough, cattle, &c.

9. The best means of encouraging the cultivation of cotton would be by making advances in the proper season.

10. The inhabitants would willingly undertake the cultivation of Bourbon or of Tinnevelly cotton.

NELLORE.

1. Cotton is not cultivated to any extent in this district.

2. There is no export of the article. It is imported from the Ceded Districts and Palnund, and re-exported to Madras.

3. The medium price of cotton is sixty rupees per candy of five hundred pounds.

4. The end of July, the whole of August, and the beginning of September, are the seasons for sowing, and the cotton is plucked in December and January. The land is ploughed about four times.

5. Bourbon cotton is unknown.

6. Some parts of the Buddepoody, Doottalore, and Ongole divisions, are calculated for the growth of the article.

7. The rent of the soil productive of cotton is from two to seven pagodas per gortoo, or two and a quarter Madras candies.

8. The expense of cultivation for a gortoo of land is forty-eight fanams.

9. The soil is not generally favourable for the cultiva-

 tion

tion of cotton, and the inhabitants would not willingly give up their grain cultivation.

10. The inhabitants being entirely ignorant of Bourbon cotton, it is therefore impossible to come to any terms with them, and the article could not be produced to any great extent in the districts.

JAGHIRE.

Cotton is not cultivated in this district, and the land is not suitable to the growth of the plant. Regarding the export and import of the article no information has been furnished.

CUDDALORE.

1. Cotton was cultivated in Fusly 1220 (A.D. 1813-14) to the extent of 10,119 cawnies 13 annas in the southern division of Arcot, and the season was far from being good.

2. By land it is imported to the extent of from six to seven hundred candies, but there is no exportation. There is neither export or import by sea.

3. The price of the article is from twenty-two to thirty-two pagodas per candy of cleared cotton, according to the quality.

4. There are two kinds of cotton cultivation in this district; the one called "copum puter," the other denominated "darum puter." The former is sown from the end of November to the beginning of January, and plucked between the end of April and the beginning of July; the latter is sown between the 13th July and 15th September, and plucked from January to the beginning of May. This description of cotton is of a very inferior quality.

5. Bourbon cotton is not cultivated in the district.

6. A larger proportion of the poongee land is well calculated

culated for larcum puter, and there are some spots, but of no great extent, adapted for copum puter.

7. The rent of the land is from one pagoda to 2 pagodas 2 fanams 62 cash per cawny.

8. The expense of cultivation is not clearly stated.

9. The best encouragement to the cultivation of cotton would be, an increased demand for the article, making it worth while to cultivate it.

10. The ryots would not object to make an experiment of the *Bourbon* cotton-seed, but it would take a considerable time to induce them to give up the cotton of the district.

TANJORE.

1. Cotton, to the average amount of 736 candies 4 maunds 15 vis, separated from the seed, is cultivated in this district.

2. It is imported into Tanjore from the adjacent district, but there is no export of the article.

3. The usual price of a candy of five hundred pounds, is from twenty-two to twenty-eight pagodas.

4. The period of sowing is from January to April, and of plucking from May to June. The ground is ploughed from five to ten times; it is then well manured, and after the plant has appeared, the grass and weeds must be removed as often as necessary.

5. The Bourbon cotton is not cultivated in this district.

6. The soil in general is not calculated for the growth of cotton; but during the most favourable season five thousand cawnies of land may be cultivated.

7. The rent of such land is about twenty-five fanams per cawny.

8. The aggregate expense of cultivation of cotton in this district

district is about three pagodas thirty-eight fanams per cawny.

9. The best mode of encouraging the cultivation of the article would be by entering into engagements with the ryots and making advances.

10. It does not appear whether or not proposals for the cultivation of Bourbon or Tinnevelly cotton would be acceptable to the ryots.

TRICHINOPOLY.

1. The average produce of this district in the Fuslies 1219, 1220, and 1221, (A.D. 1812-13, 1813-14, and 1814-15, is 2517 candies 13 maunds 7 vis of cotton with seed.

2. There is both an export and import of the article. The former, it is believed, exceeds the latter.

3. The price of the article not separated from the seed is from five to eight pagodas per candy, cleaned from the seed. Its price is from twenty to thirty-three pagodas; at present it is thirty-two pagodas per candy.

4. When the cotton-seed is sown by itself, it is put into the ground in September, October, and November, and it is plucked from the middle of March to the end of May. If the cotton-seed is intermixed with dry grain, it is sown from July to September, and the gathering commences in March. The ground is ploughed four times and manured; the seed is then sown, and the plant must be kept clear of grass and weeds.

5. Bourbon cotton does not grow in the district. The cultivation was attempted in 1802, but the experiment entirely failed.

6. The greatest part of the land in the district is unfit for the cultivation of cotton: part of the district must, however, be considered favourable for the growth of the article

7. The

7. The rent of land fit for the cultivation of cotton is from twenty fanams thirty-five cash, to one pagoda ten fanams six cash per cawny.

8. The expense of cultivating one cawny of land, exclusive of rent, is one pagoda five fanams ten cash. It is impossible, however, to speak to the point with certainty, and this is merely an estimate.

9. The best mode of encouraging the growth of cotton would be, by granting an easy rent, and encouraging to receive the cotton for two or three years at a favourable price.

10. There is no doubt but that some might be persuaded to cultivate Bourbon cotton, but a small supply only of the seed should be forwarded in the first instance, and it is presumed the experiment would turn out to advantage; in which case the ryots will be as eager, as they are now backward, to extend the cultivation.

RAMNAD, DINDIGUL, *and* MADURA.

1. In these districts there are 26,623 cawnies ¼ annas of land fit for the cultivation of cotton, of which in Fusly 1221, 1764 cawnies 9. 3½ annas were cultivated, and 8,973 cawnies 12¾ annas were left waste.

2. In Madura and Ramnad a considerable quantity of cotton is exported. In Dindigul the export is trifling; but there is no import of the article in either district.

3. The present price per candy of five hundred pounds is 31 pagodas 2 fanams 65 cash, but in ordinary seasons it is to be procured at from 22 pagodas 8 fanams 25 cash, to 25 pagodas per candy.

4. In some parts of the district the inhabitants commence ploughing in April, in others in June. It is ploughed from five to seven times, and after having been well manured the seed is sown in the latter end of August

September,

not alluded to in the report, but the export from the district is known to be very extensive.

3. Until April 1812, the price of cotton was at fourteen pagodas per candy of five hundred pounds; it increased to thirty pagodas in that year. In 1813 the cultivation continued limited, and the price rose to, from thirty-eight to forty-five pagodas per candy, which latter price is now current.

4. This district produces three different kinds of cotton; the naudum, copum, and shemparthee. The naudum parthee is literally a triennial shrub: it is sown upon red soil intermixed with sand, most frequently covered with small stones. The mode of cultivating it is first by penning cattle on the ground for the purpose of manuring it, and when sufficiently prepared by ploughing it from four to twelve times, according to the degree of manure that has been applied, the seed is sown in the months of September and October along with some of the coarser grains, such as gram, shumay, &c. In May, a first plucking takes place, in January succeeding a second, and a third in September, the whole producing sixteen-fold. The copum parthee is sown in rich black ground; it requires nine times ploughing, but no manure is necessary. It is an annual, and produces two crops, the return of which is sixteen-fold. The shem parthee grows to a large plant; it is cultivated in gardens and used only for spinning braminical threads.

5. The Bourbon cotton is not generally produced in the district. It was introduced about eight years ago, in the hope that it might be generally cultivated; but as there was no demand for its encouragement, the culture lasted for four or five years and was then discontinued: a small quantity is however kept up in some part of the district. It appears to be a much more luxuriant shrub than

than the common cotton; but similarly situated, the produce may probably be but little more.

6. The soil of the country appears to be very favourable to the growth of Bourbon cotton, and the cultivation might be introduced with success.

7 and 8. The rent of land fit for the cultivation of the naudum parthee for three years is one pagoda twenty fanams eight cash per cawny; the expenses of cultivation would amount to about two pagodas seven fanams seventy-two cash.

The rent of land fit for the culture of the copum parthee amounts to twenty-five fanams and forty cash per annum; the expenses of cultivation may be estimated at two pagodas twenty-seven fanams seventy cash.

9. The best mode of encouraging the cultivation of cotton would be to guarantee a steady lasting demand for the produce, the abolition of arbitrary prices, and authorizing advances to be made through the Collector.

10. There is no doubt but that the ryots would be willing to attempt the cultivation of Bourbon cotton, and there can be no objection, at any rate, to a trial being made. As soon as the ryot found an eager demand for the Bourbon cotton and a better price for the cotton of the country, nothing but bad seasons would prevent the increased production of the article, as long as that demand continued to exist. The advances should be made to the extent of one and a-quarter pagodas per candy through the Revenue Department, and recovered like other advances, and the ryot who engages to cultivate the Bourbon cotton should be supplied gratis with seeds for the first year. When the crops are on the ground, the Commercial Resident may advance for the purchase; and it might prove a good stimulus to a greater attention to the shrub, to give an advance upon the market-price for

for every candy exceeding four, upon a certificate from the Revenue Department.

CANARA

Produces no cotton. It is imported from the Mahratta and Ceded Countries to the average quantity of nine hundred and twenty-eight three-fourths candies annually, and is exported chiefly to Bombay to the average quantity of eight hundred and fifty candies for the last three years. The average price per candy of five hundred pounds is Star Pagodas 18. 38. 46.

MALABAR.

No cotton is produced in this district.

CEDED DISTRICTS.—KURPAH DIVISION.

1. *Cotton is cultivated to considerable extent in this* division. The six principal talooks produce the estimated amount of 2750 candies; of this the greatest part is white, and the remainder the brown cotton. The eleven remaining talooks also produce considerable quantities of the article.

2. There is a considerable export of cotton from this district, chiefly to Madras, Calastry, and Nellore. Cotton and cotton-threads are also imported from the Nizam's territories and from the Ballaree division, but to no great extent, and they are generally re-exported to Madras and other places.

3. The average price of cotton in this division is eighteen and one-third pagodas per candy of five hundred pounds, *though this estimate is somewhat beyond the real price of* the article.

4. The sowing season commences in August and continues until September: the harvest is got in during February, March, and April. Manure is sometimes used,

but

but not generally. The ground must be ploughed several times and must be well cleaned. The seed may be sown some days after a fall of rain, and the plant must afterwards be kept clear of weeds and grass.

5. Bourbon cotton has never been tried by any native in this division. An experiment on a small scale was once made by some gentleman on middling kind of land: the crop was luxuriant and produced very fine cotton.

6. The Ceded Districts in general are well calculated for the growth of cotton. Black ground, of which there is abundance, is most favourable for the cultivation, and it is produced also on red land. The deficiency of population will prevent the increase of the cultivation to any great extent, otherwise the large tracts of waste lands might, with considerable trouble and expense, be turned to account for the cultivation of the article.

7. There are four sorts of land on which cotton is cultivated in this division. The amount of the rent of one acre is stated by the Amildar to be from nineteen fanams ten cash to one pagoda and thirty-five cash; the expenses of cultivation from thirty-one fanams seventy cash to one pagoda twenty-one fanams twenty-four cash. This account however, evidently appears to be exaggerated, and the following will be found to be nearer to the truth.

	fams.	cash.		
Average of the four sorts of land per acre	22	40		
Ploughing, cooley-hire, beds, &c.	22	38		
			44	78

The produce of the same quantity of land may be estimated at one pagoda sixteen fanams eight cash, which leaves a profit to the landholder of sixteen fanams ten cash.

8. The best mode of increasing the growth of cotton would be by bringing the waste lands under cultivation.

9. The

9. The ryots in this division are ignorant of the nature of the cultivation of Bourbon cotton; they would, however, consent to make an experiment, which would decide the point in question.

BALLAREE DIVISION.

1. In this division of the Ceded Districts 170,958 acres of land were cultivated in Fusly 1221, (A.D. 1814-15) the survey rent of which amounted to Pagodas 814,738. 22. 40. The produce was estimated at 40,710 candies 2 maunds, inclusive of seeds, producing 10,156 candies 14 maunds without seeds.

2. During the same period, cotton to the amount of 12,781 candies 17 maunds was imported, and 17,223 candies 11 maunds of that article were exported.

3. The average price of cotton during the last twelve years is sixteen pagodas forty-two and a-quarter per candy of five hundred pounds; the average price in this district, in Fusly 1221, (A.D. 1814-15) is fourteen pagodas twelve fanams fifty-seven and a half cash.

4. The period of sowing the cotton-seed is from the 14th of August until the 10th of September; and it is generally sown along with other grains, such as kungorie, akloo, mooney, and barry. When cultivated singly, the sowing is frequently put off until a fortnight or three weeks later, but is never protracted beyond the 23rd of September. The plucking commences in February, and continues in different parts of the district until May. The mode of cultivating the land already brought under tillage is very simple. The thorns and roots of the preceding season are first cleared away, and the ploughing and sowing are performed at one operation, by means of the drill-plough. The crop must be frequently raked and cleared of weeds, and kept free of grass, until it has arrived at maturity.

5. Bourbon

5. Bourbon cotton is not cultivated, nor even known by name, in this division of the Ceded Districts.

6. The land fit for cotton cultivation, including waste and enam land, amounts to 14,60,699 acres. The land actually cultivated at the time of survey was 911,803 acres, the survey-rent of which was 446,674 pagodas.

7. The average rent of land capable of producing cotton is eighteen fanams fifty-nine cash per acre. The highest rent averages one pagoda four fanams sixty-eight cash, the lowest two fanams thirty-three cash.

8. The average expense of cultivating five acres of land already brought under tillage, is estimated at two pagodas fourteen fanams sixty-one and a quarter cash, including the price of seeds, which leaves a net profit to the ryot of two pagodas thirty fanams eighteen cash. But the produce appears to be undervalued and the expense overrated.

9. Nothing but a certainty of demand for the article, and a considerable increase of prices, can very materially encourage the extension of the cultivation. The Commercial Resident, by entering into large contracts with respectable merchants for the supply of cotton, will be best able to promote the growth of it: a rapid increase of the cultivation cannot, however, possibly take place until the population shall have been augmented.

10. From every inquiry that has been made, it does not appear that the ryots would undertake the culture of Bourbon cotton. Substantial ryots require no advance, and would not in general be persuaded to enter into conditions, unless the price stipulated was so high as to offer a prospect of such gain as the Company, it is presumed, could not afford to grant.

EXTRACT LETTER from the Superintendent of Resources to the Accountant-general.*

Part of Para 6. The time of sowing is said to be rather earlier, by the assistance of irrigation, in the countries known for the superior produce; but, generally speaking, at the commencement of the rains, or late in June. The harvest begins in October, and continues to the end of December. It is a subtee crop: that is, the ryot pays the rent of his land at a fixed rate in money, or compounds *for the share of the zemindar at the time* appraisement of his field is feasible.

* Extract Bengal Commercial Consultations, 18th September 1812.

EXTRACT OBSERVATIONS

THE COTTONS OF INDIA,

And particularly those of the Ceded Districts:—By Mr. BERNARD METCALFE, dated 1815.

There are two species of the shrub-cotton, *viz.* the black and the green seed, in each of which there are, probably, as many varieties as of the gooseberry or any other shrub. The black seed is only cultivated in the West Indies and the Brazils, because the labour required in separating the cotton or staple from the seed is neither so difficult nor so tedious as the green seed. The cottons grown in India are for the most part a variety of the green seed, of which some are more easily cleaned than others. Those that may be regarded a staple commodity of the country are principally found in the Company's possessions, in the Guzerat and the Broach, in the Mahratta dominions, and the Ceded Districts of the Nizam: they are likewise cultivated to a considerable extent in the province of Bundelcund and the Rohilla country, as well as in the Southern Districts of the Peninsula. In fact, the cotton-plant is indigenous in most countries within the tropics, and cultivated in much higher latitudes, neither requiring a very rich, nor impoverishing a lighter soil. It has this singular property, of producing the finest staple where the waters are brackish. The Georgia Sea Island, the Surinams and Demeraras, are all grown on the border of the sea, and the prime qualities only as far inland as the influence of the sea-air and tide-waters

extend. I have often regretted not having the means or opportunity to ascertain how far the lands in that great delta of the Sunderbund, and particularly the provinces adjacent, which after the secession of their waters during the eastern monsoon are so strongly impregnated with salt, would not produce cottons of an equally fine texture with those above-mentioned, and which in England always bear so high a price. The presumption is, the attempt would be successful, provided the black seed was procured from Demerara or Georgia.'

The cottons grown in the Ceded Districts are a variety of the green seed, to which they adhere with great strength, and are in consequence difficult to clean. The capsule and seed are both small, and the fibres of the cotton have the appearance of having interlocked in their growth. In confirmation of this, the American saw-gin sent out by the Company to Mardas, which was imported from Charlestown, and no doubt constructed there by a regular gin-maker, and competent to cleaning the bowed Georgias, would not, when the attempt was made to clean with it the district cottons, discharge the seeds, but became immediately choked. In fact, it was observed, those I had built on the same principle succeeded much better. But it was not from the introduction of any new machinery, but rather the improvement of that already in use, more particularly by introducing greater precautionary means in the first stages of its manupilation, the gathering in from the field (or as the Americans call it, the picking), that I grounded my hopes of any improvement of the district cottons; for their principal deterioration is less from the quantity of seed in them, than their being specked or fouled with broken leaf. Any improvement of the cottons at present cultivated, after the experiments that have been made, it is evident must be by resorting to these

these means; and even then will only be limited, for the cottons generally throughout India are of so short a staple, that with all the care that can be given them, they will never have a much higher character. A more effectual improvement would no doubt be, to send them the seed of a new and different variety of the plant.

The introduction of a new variety of the cotton-plant is, however, regarded as almost chimerical; and though it is admitted that the influence of the Company's servants over the agriculturists in India seems to insure the success of such an attempt, yet the advantage is regarded as too remote and uncertain to induce its being made. It is apprehended, likewise, that any new variety of the cotton-plant would gradually, from the effects of climate and soil, assimilate in character to what is already produced. This idea, however specious, is nevertheless a mistake; for that the inferiority of the district cottons is more to be attributed to the variety being originally bad, than to the effects of climate or soil, is evident, from there being better cottons made both to the northward and southward of the Ceded Districts, and both in similar soils. In the black-cotton lands, as they are called, to the northward, they are made in the Nagpore districts and the sources of the Nerbudda, and carried overland to Mirzapore, and from thence down the Ganges to Calcutta: and to the southward, again, better cottons are produced in the black-cotton lands of Tinnevelly. In Tinnevelly, likewise, some attempts have been made from the Bourbon seed, and not without success. I remember seeing a letter where they had been withdrawn at the Company's sales at two shillings and sixpence per pound; as well as its then occurring to me, that the produce of the same lands, had they been planted with the seed of the district cottons, would not have brought

 more;

more, perhaps, than elevenpence or one shilling per pound.

In the Ceded Districts there are two varieties of the green seed. What are made to the westward near Bellary and Adoni, are more woolly and not so fine as what are produced in the eastern talooks near to Cuddapah. These latter, no doubt, with greater care would be a much more valuable cotton.

I have thus endeavoured to show, that the improvement of the cottons at *present cultivated* in the Ceded Districts, materially depends on introducing greater care in the first stages of its manipulation. The instance likewise mentioned, of Bourbon seed succeeding so well in Tinnevelly, affords a presumption, that an importation on a considerable scale of a variety of the black cotton-seed might not only improve the condition of the cultivator, but materially increase the export of cotton-wool, both to China and England. The improvement of our manufactures at home have gradually superseded the demand for those of India, whilst the demand for the *raw material* from India has increased, and is likely to increase, in a much greater proportion; and any improvement that could be given to it, would equally promote the prosperity of the country and the Company.

At the Isle of France and Bourbon the *black-seed cotton is only* cultivated. The plant looks sickly, and, from whatever cause, is said to be less productive than formerly. At present it is giving place to sugar, which they find more profitable. My long detention there, waiting the event of the *Benson's* being condemned or repaired, gave me every opportunity of seeing their culture and management of it. It is a more recent staple at the Seychelles, where the plant is represented as more vigorous; but should the Company ever regard it an object to introduce a different

a different species of the cotton-plant into their possessions in India, the Brazil cottons (*viz.* the Pernambucos or Bahias) would perhaps be as desirable as any. From Demerara or Grenada there would be a necessity of having seed by the way of England, and the frequent changes it would be exposed to of climate, &c. would increase the risk of its being damaged from fermentation. The machines sent out for cleaning cottons were very inadequate to the purpose intended. They were defective, as well in principle as in the material of which they were constructed. All machines of the kind, particularly for India, should be simple and made at a trifling expense. Those in use by the natives are, for the most part, made in the family, and at a very trifling if any expense. They make no great despatch, but with a little alteration would nevertheless answer every purpose.

FURTHER OBSERVATIONS

WITH REFERENCE TO

EAST-INDIA COTTON-WOOL.

By Mr. R. Hunt, November 1828.

Since the observations which I printed in 1808, Brazil cottons have undergone some improvement. In consequence of the very extensive and growing application of the American Upland Georgia and New Orleans cotton to the purposes of the British manufacturers, added to the introduction of cotton from Egypt, since the year 1823 (which competes with the Brazil and other *black-seed* descriptions), there has been such an abundant supply of long-stapled cotton in proportion to the consumption, as to have reduced the prices of that class, at the present moment, to within twenty per cent. of the American green-seed cottons, taking the average price of each class; whereas, previous to the import of Egyptian cotton, Brazils and other black-seed cotton generally ranged fifty per cent. above the American. If any further attempt should be made to improve the cultivation of cotton in India, the question occurs, how far it might be advisable to try the black seed, as an experiment, in the first instance, for the purpose of ascertaining the difference in the expense, compared with the quantity produced of each class.

With regard to the leading descriptions of cotton at present produced in India, (*viz.* Bengal and Surat, including in the latter the whole of the imports from Bombay,) the Bengal may fairly be considered to be out of use with the British manufacturer. Surat cotton, such

as a good portion of the imports of 1817 to 1826 consisted of (that is, good, clean, bright-coloured, thomil cotton), would always find a consumption to a certain extent; which, of course, would be increased if the staple could be a little improved by the introduction of seed from America, particularly from New Orleans. The best quality of the Bombay cottons have always been considered to be the Broach and the Surat, which in good seasons are equal in staples to middling bowed Georgia. But the cargoes from Bombay, which have been arriving for the last twelve to eighteen months, have, from their almost entire want of every property estimated by the British manufacturer, been the cause of many of those who were previously in the habit of using Surat cotton turning their backs upon it; and it can only be by a very great improvement, particularly in cleanness, that they can be expected to return to it. It appears to me, that the cause of the depreciation is principally owing to the very slovenly way in which the crop is gathered from the plant; and without a thorough reform in that particular, it will be of little use introducing new seed, or increasing the expense of cultivation in other respects. If the crop be carefully gathered when in a proper state of maturity, agreeably to the instructions in my observations for the benefit of the Brazil planters, it will require comparatively little other cleaning, beyond freeing it from the seed by the American gin, in its most improved state.

REMARKS

ON THE

CULTURE OF COTTON

IN THE

UNITED STATES OF AMERICA (1829).

The preparation of cotton-land requires most particular attention. It must be repeatedly ploughed and frequently harrowed, say twice or thrice, until it is thoroughly pulverised: drills four feet apart, in some instances three, are then made with a plough, into which, if the soil be poor, old well-rotted stable manure is placed, and at the distance of one and a half to two feet, a hole, not exceeding one inch to one and a-half inch in depth, is made with a hoe, and a handful of seed dropped therein, which must be immediately covered with the soil. The planting generally takes place between the 20th April and 10th May; the earlier the better, in order that the cotton may be matured before the appearance of the fall-frosts. The richer the soil, the larger and better the crop, as with every vegetable. When the plants are about one inch above ground they are thinned with the hand, leaving four only. At a later period, and when all danger from worms, &c. is well over, they are again thinned, and two only are left to bear; from these, by boeing or ploughing, the weeds must be kept clear, until the bolls are perfectly ripe and begin to open, which occurs during September and October. As they expand freely, the cotton must by hand be picked clean from the boll, and being a little damp, exposed for a day or two, in a dry situation, to the rays of the sun.

The

The quality of cotton first picked is always the cleanest and best. To save trouble, it is customary with some planters to defer picking out any of the crop till the whole of the bolls be ripe, and have expanded and become dry by the influence of frost or cold weather. This plan is to be deprecated, for the bolls open most irregularly: those first expanded are left to be injured by rains, dews, and decayed leaves, &c. When the crop is picked from the boll, it is spread over the floor of a room (should the cotton be damp) till it is dry, and is then sent to the gin, when the seed is extracted from the fibre. During the first week in August, some planters, when the crop is not too extensive, top each plant to the first eye, leaving six branches only to bear. This increases the quantity and quality, but forces the plant to throw out suckers, which are most difficult to keep under.

Stiff clayey soils require more seed than light sandy ones. The plant being very delicate, requires the united efforts of several shoots to force its way through the surface, which often becomes packed and hard. Where seed is abundant, a large handful should always be sown in each hole; where it is scarce and the land light, a small quantity may suffice. Two-hundred English acres would require from eight hundred to one thousand bushels of seed-cotton.

An acre will produce from one thousand six hundred to two thousand pounds of seed-cotton, or four hundred to five hundred pounds of clean or ginned cotton; but this is a large yield. Generally, on average soils, from one thousand two-hundred to one thousand six-hundred pounds of seed-cotton, or cotton in the seed, are produced to the acre. Our bales weigh from three hundred and fifty to four hundred pounds.

STATEMENT

OF THE BEST METHOD OF CULTIVATING

NEW ORLEANS COTTON.

The cultivation of cotton is simple and easily understood, so that a few general directions will suffice to describe our manner of preparing a cotton-field, and the care and attention requisite to keep it free from weeds and grass.

As to the most suitable soil for growing fine cotton, I would prefer that which is rich, light, and dry; but it is generally thought, that *new* land does not produce as fine a quality of cotton, as that which has borne one or two crops of grain previously. The situation should be such that there is no danger of an overflow of water, which would seriously injure the plant. In preparing the ground, we use the plough entirely, and lay off the rows from four to six feet; and where the soil is as rich as the alluvian of the low grounds on the Mississipi, even eight feet is not too much. We open the ridges by running a narrow drill, by plough or otherwise, and sow the seed in it as we would grain, covering it lightly with a harrow.

The plant on its first appearance, and for some weeks, is extremely delicate and easily injured by careless working. The rows, at first thickly covered with plants, must in about ten days be thinned out, so as to leave the stalks single, at the distance of eleven inches or a foot from each other: or as some of the plants may be lost or destroyed, we generally leave two or three together; but in about two weeks more, at furthest, they must be reduced to one,

as

as experience has proved that the plants will not flourish if at all crowded. While thinning the rows, great care must be taken to clear them of all grass and weeds: in the early age of the cotton this is done with the hoe. In a short time after, to facilitate the work, we use ploughs between the rows, where every thing must be kept down, and not a blade of grass should be suffered to grow. The only art in making a good crop of cotton is in the rule, not to suffer any thing to grow among the plants until it is fully matured.

The time of planting, or rather sowing our cotton, varies according to the season. Generally, we begin from the 1st of April to the 15th; as a rule, I would say as soon as there is no further danger of frost. These general observations, I trust, will be sufficient; indeed it is impossible to fail in making a cotton crop, provided the ground be kept perfectly clean and the plants be not crowded. The quality of the cotton depends more, perhaps, upon care and attention in gathering and drying it, than upon the culture of the crop.

From the 1st of September, or sooner, the bolls begin to mature and open successively, until winter has stopped the vegetation of the plant. As soon as the boll has completely opened, the cotton, which then hangs partly out of its shell, and has become almost dry, must be gathered by hand. Care must be taken by the picker to take hold, with his fingers, of all the different locks of the cotton, so that the whole comes out at once, and without breaking off any of the dry leaves about the boll. If any fall upon the cotton before the gatherer (or picker, as we call the labourer) has secured his handful in the bag which hangs out at his side, it must be carefully taken off. It is necessary to use a close bag to gather the cotton: for the plant, though still flourishing, has on it many dead

dead and dry leaves, which are easily shaken down; and it is this leaf which the spinners object to so much, and which will always lower the price and quality of cotton. After gathering the cotton, it should, as soon as possible, be exposed to the sun on scaffolds, and thoroughly dried; and if not immediately ginned and packed, must be stored in secure barns.

I deem it useless to enter into a description of our gins and presses. I will only observe, that a cylinder of sixty rags ought not to make more than six hundred to eight hundred pounds of clean cotton in twelve hours: if made to run faster, the cotton would not be so clean, and the fibres might often be broken or cut by the too rapid motion of the rags.

QUESTIONS put to the MAKER of WHITNEY'S SAW-GINS, with his ANSWERS thereto.

1st. How do they use or put into motion Whitney's cotton saw-gin?

1st. By a leathern band on the whirl on the saw-cylinder.

2d. Can any idea be given of the proper rate of speed?

2d. From two hundred to two hundred and fifty revolutions in one minute.

3d. Should the trough be kept nearly full of uncleaned cotton whilst at work, or what proportion is best?

3d. The trough should be kept even full all the time.

4th. How many hands are employed at once upon one gin?

4th. One hand is all that is necessary to put the cotton into the trough.

5th. How much can be cleaned by one gin in a day?

5th. About nine hundred pounds clean cotton per day.

6th. Can several gins be moved at the same time by the same power.

6th. Yes; but most of the gins here are carried by horse power, and not more than one is carried by two horses, and that is done by a large cog-wheel.

Columbia, 9th December 1829.
(United States.)

DESCRIPTION

OF

WHITNEY'S SAW-GIN.

Plate 5.

Figure 1 represents an end elevation of the machine *Fig.* 2 also an end elevation with the top part thrown back, the side of which is seen partly removed, in order to exhibit its internal construction. *Fig.* 3 is a plan view, and *fig.* 4 is an end view of the brushing-roller and circular saw.

In this plate the corresponding letters denote similar parts in all the figures; *a*, *a*, is the frame; *b* is the band actuating the band wheels *c*, *d*, which are fixed on the end of the axis of the roller *e*, which carries the saws, *f*, *f*; *g* is the brushing-roller, upon the axis of which is fixed a small roller *h*, which presses upon the band *i*, carrying the wheel *j*, and causes the brushing-roller to be driven with great velocity; *k* is a series of ribs or metallic grating, so constructed as to fit nearly close between the saws *f*, *f*, and to admit a portion of their teeth through the apertures, in order to free them from any particles of the cotton fibre which may adhere to them; *l* is a board placed in the direction represented, having a number of notches corresponding to the number of saws cut in the lower edge, which press upon the metallic ribs or grating, and thereby form a hopper or receptacle for the seed before it is freed from the cotton; *m* is an aperture in the top cover to admit the supply of seed; *n*, *n*, are boards placed

placed angularly from side to side of the cover, to enclose the cotton fibre whilst in agitation by the rapid motion of the brushing-roller; *o* is another board, so placed as to act upon the brushes and free them from any adhesion of the cotton, and *p* is an inclined plane, down which the cotton falls when separated from the seed; *q* is an open part of the wooden casing, which admits of the removal of the seed after it has been acted upon.

The action of the apparatus is as follows:—Motion having been communicated to the machine by the band and rigger, as represented at *d*, *c*, in the plan, or by any other motive power, the roller *e*, carrying the saws *f*, is made to revolve, and their teeth come in contact with the down of the cotton which envelopes the seeds contained in the hopper, and separates it from them. The brushing-roller revolving at the same time in a different direction, at far greater speed, as before described, to the roller carrying the saws, cleanses the saws, and causes the fibre to be carried round towards the inclined plane, where it falls down, and is deposited in a clean state fit for use.

It may be necessary to observe, that the seeds being freed from their fibrous covering fall through the notches cut in the bottom edge of the board *l*, and are taken away at pleasure by means of the opening *q*.

REPORT

OF THE

PROCEEDINGS OF THE EAST-INDIA COMPANY

IN REGARD TO THE

TRADE, CULTURE, AND MANUFACTURE

OF

RAW-SILK.

REPORT.

The trade of the East-India Company in raw-silk was inconsiderable in extent before the middle of the last century.

Until the establishment of regular places for its preparation under the management of their own servants, the East-India Company, in common with other Europeans who then had factories in India, or resorted there for the purposes of trade, provided their investments by purchases in the market, or by contracts with native dealers and others. The chief places then producing silk were Cossimbuzar, Commercolly, and Rungpore.

The description of silk imported from Bengal was of the kind now known by the technical term of "*country wound*," being wound from the cocoons and reeled into skeins after the rude manner immemorially practised by the natives of India. This kind of silk was suited but to few of the articles manufactured in England, the chief consumption being for sewing-silks, buttons, and other small articles of haberdashery, &c.

The principal fault in the Bengal raw-silk was its inequality in the same skein. It was common to find part single, part double, treble, and in many instances even quadruple. The mode of assortment was also much neglected; and into such disrepute had the article fallen, that the Court of Directors informed the Bengal Government, that unless the defects could be rectified, the Company must abandon the exportation of it to England.

Notwithstanding, however, the animadversions of the Court, the quality of the successive importations of silks did not improve. This, as might be expected, caused occasional dissatisfaction and complaints among those concerned in the trade and manufacture of the article in England, and the Court were consequently induced, in the year 1757, to send out to Bengal Mr. Richard Wilder, a gentleman who had the reputation of being perfectly acquainted with the culture and preparation of silk in every stage, having been conversant with the subject during his whole life. The object of his mission was to examine into the causes of the defective quality of Bengal raw-silk; for which purpose he was directed to proceed to Cossimbuzar (at that time the Company's chief factory in Bengal)

Bengal), in order that he might be on the spot where the raw-silk was produced.

Mr. Wilder continued in India till the time of his death in the year 1761, and laid the foundation of great improvements in the winding of the silks.

In 1765-6, Mr. Joseph Pouchon, who had exhibited to the Bengal Government samples of silk wound under his direction from cocoons collected near Calcutta, which appeared much superior to the silks generally produced, was engaged by Government to carry on at Cossimbuzar the improvements begun by Mr. Wilder. In a letter to the Governor-general in Council, Mr. Pouchon stated, that he had mounted in his filature, reels which he could increase to any number which the Company might require, at but trifling expense, as the cost of each stove, reel, and all its appurtenances, did not exceed three rupees; that the machinery was suited to the genius of the country people, and the silk had been declared, by competent judges, to be very perfect, so that silk might be produced from the East-Indies as good as any of the best sort that came from Italy, or any where else in the world, at a very moderate price, to the great benefit of the Company and the advantage of British manufacturers.

Mr.

Mr. Pouchon continued in his employment under the Company for some time, but it does not appear that any considerable quantity of silk wound by the improved mode was exported from India to this country.

Subsequently to the acquisition of the Dewannee, efforts were made to extend the production of raw-silk, as an object in every way beneficial to the interests of Bengal, and especially by creating additional employment for the natives, now become the subjects of the East-India Company: the cultivation of the mulberry was recommended in the strongest manner to the Zemindars and landholders, and all possible encouragement afforded for the clearing of such lands as would best answer the purpose. Similar endeavours were used by the Collector-general of the Revenue, to induce the farmers in Burdwan and the Calcutta lands to pursue a branch of husbandry, that was expected to tend equally to their own advantage and to that of the Company.

The Court of Directors approved the proceedings, and in 1768 advised their Government that it was to the increase in raw-silk that they looked chiefly for the means of bringing home their surplus revenue, the importation being a national benefit,

benefit, and the consumption being far less limited than that of manufactured goods. A wish for these reasons was expressed, that the influence of Government should continue to be exerted to promote the growth of the mulberry-tree.

In a subsequent despatch the Government was informed, that although there was no branch of their trade which the Company more ardently wished to extend than that of raw-silk, yet the Court could not think of effecting so desirable an object by any measures that might be oppressive to the natives, or attended by an infringement of that freedom, security, and felicity, which it was desired they should enjoy under the Company's Government and protection; that no compulsory methods should be taken to increase the number of silk-winders, but that the object should be effected in such a way as would make their advantage coincide with the Company's. The wages of winders at this time, it appears, fell short of the amount obtained by day-labourers, or common workmen in other branches of business, and it was proposed from home to increase them to such an extent, as to make them exceed the ordinary rate of wages. The Government was also enjoined to endeavour to induce the manufacturers of

of wrought silks to quit that branch and take to the winding of raw-silk.

Every encouragement was to be extended to the cultivation of the mulberry-plant, so as to make it more general through the Bengal provinces, and the Government was directed to make such deductions from the rents of the lands planted with it, as should have the effect of a bounty in its favour, and render it more profitable than any other article of culture.

In conformity with the instructions of the Court of Directors, an advertisement was published in 1772, inviting the Ryots to cultivate the mulberry-plant, and as an inducement thereto, declaring that new or waste lands laid out and improved for this purpose, should be held rent-free for two years, and be taxed at half the price of the ancient mulberry-grounds of the same pergunnah or village for the third year; in all succeeding years the lands were to be assessed at the full rates. This offer was made subject to the condition, that the Ryots were to keep in cultivation the lands which they actually held at the time by their original pottahs, whether laid out in mulberry plantations or any other species of culture, and to pay their usual rents without any claim for deduction.

The

The result of the exertions of the Company was a considerable increase of their importations; but as the measures adopted for the purpose of introducing better modes of preparing the silk had been but partially successful, the market became overstocked.

Experience having shewn, that the sales of raw-silk imported from India could not be much extended without a decided improvement in its quality, and the complaints in England of the inequalities and frequent breaks in the threads continuing unabated, a plan was proposed, in 1769, for introducing into Bengal the exact mode of winding practised in the filatures of Italy and other parts of the Continent. By the adoption of this method, it was thought that the consumption of Bengal raw-silk might be extended, and that it might ultimately displace a portion of the silks of Italy, Turkey, Spain, &c., in various branches of manufacture, to which, under the ancient mode of winding, it was wholly inapplicable

The opinions of the most considerable dealers and manufacturers were taken, and it appeared in their judgment that the staple of the Bengal raw-silk was equal to that of the Italian or Spanish,

Spanish, and capable of being used for all the purposes to which the latter were applied, if reeled in the same manner, so as to render it easier to wind, and to make it work with less waste. With such advantage, it was believed a much higher price might be obtained. With regard to the first letter of Commercolly silk, it was represented that, if it would wind and *rid* as fast as the Italian or Piedmontese sorts, five hundred bales would be taken off by the London market, instead of twenty or thirty bales, and at an advance of twenty-five to thirty per cent. In the lower letters proportionate advance was anticipated. Even those of D and E might, it was said, be so manufactured, as perfectly to answer the purposes to which the Spanish and Calabrian silks were applied, and to bear an increase of twenty per cent. on the price, while no quantity could be too large for the demand.

To secure the realization of the desired improvements, the Court deemed it expedient to engage experienced persons to proceed to India, in order to superintend and assist in raising and improving the produce of the worms and the drawing the silk from the cocoons, according to the best methods practised in Italy, and other parts of Europe.

For

For this purpose the services of several Englishmen and Foreigners were retained. Mr. James Wiss, a native of Piedmont, was ordered to be stationed at Commercolly, or such other principal aurung as might appear most conducive to the Company's interests. With Mr. Wiss were placed four Italians, J. Ruggiero, Dominicus Poggio, C. F. Bricola, and Augustus Della Casa, who were engaged as drawers and winders.

Mr. J. Robinson, an Englishman, was to be stationed at Rungpore and provided with some of the best workmen that could be procured in the country. These persons were to be instructed by him, and with their assistance he was to proceed until the arrival of three Italians, Francis Clerici, Pielo Spera, and Paulo Erva, who were to serve in the filatures which Mr. Robinson was to establish.

Mr. William Aubert was directed to proceed to another principal aurung, with Anthony Broche, Anthony Burgnier, and John Peter Angoia, reelers from Nismes in Languedoc, also James Demarin as a mechanic.

The Bengal Government were instructed to appoint each party to reside at a different place, in order to encourage a spirit of emulation. This, however,

however, appears not to have been done. The method of spinning and drawing the silk as practiced at Novi in Italy, was to be adopted throughout all the filatures, the superintendents and spinners proceeding from factory to factory, until the new method should be universally established.

Various tools, implements, and models, manufactured in London and at Novi, were forwarded to Bengal for the use of the establishments.

Mr. Wiss and the four Italian winders arrived in Bengal in 1770, and were employed at the factory of Cossimbuzar. Their method of winding the silk was found to differ from Mr. Pouchon's, by making two threads wound off upon the same reel cross each other, so as to give the silk a roundness, the want of which was the chief defect in that produced under Mr. Pouchon's management, as well as that wound in the country manner.

Mr. Robinson arrived in Bengal in 1770; and was likewise stationed at Cossimbuzar, at which place a filature on the Italian plan with furnaces was erected under the superintendance of Mr. Wiss. Mr. Aubert did not reach Bengal, but died at Madras on his way thither, in 1771,

In a short time after their arrival, Messrs. Wiss and Robinson reported to the Government, that the

the progress made in the winding of the silk was satisfactory. They stated, that the natives had become very expert in reeling the silk at once from the pod, and it was hoped their docility would render it unnecessary to send out any more superintendents, the object having been accomplished. But the Bengal Government, in bringing this report to the notice of the Court, remarked, that although some of the natives had become expert in winding, yet it would require considerable time to bring the new method into general practice, in consequence of bigotted attachment to ancient customs. At the same time, the utmost endeavours of the Government were promised to bring so valuable an article of commerce to perfection.

Besides at Cossimbuzar, buildings on the new plan with furnaces were also erected at Bauleah, Commercolly, and Rungpore.

The first silks prepared by the new or Italian method were sent to the Court of Directors in 1771, and reached England in 1772.

The report in England * upon this silk was, "that Mr. Wiss had succeeded to admiration in drawing a tolerable silk from the most ungrateful cocoons, that the sickliest worms under the most

* Tatlock.

unfavorable season, could produce; that the coarse silks could not be much improved; that it was the finer sizes that required reformation, which if accomplished, the Company would view with astonishment the advanced price, and eager demand for it." The report proceeds, in speaking of certain silk which had for some time been received from Pudapore, "that its quality was so vastly superior to any other Bengal silk, that it was supposed to be reared from the produce of worms from Valencia, Fossembrone, Messina, &c., which might suggest a hint to try some European eggs, *together with a new method of cultivating* the mulberry-tree. So luxuriant a soil, with so happy a climate for vegetation as Bengal was described to be, might possibly make the leaves of the mulberry-tree too fibrous, or the fibres too tough; it was therefore suggested to adopt the practice as in Italy, by sawing off the tap-root of the tree, which being thus deprived would draw less juices from the earth."

It must be obvious, that the introduction of the Italian worms into India could not have been effected without great difficulty, on account of the length of the voyage, and the danger of the worms perishing from being deprived of food during the passage.

passage. In a recent attempt (1827) made by Captain Pillon to introduce the Italian worm into St. Helena, the project had nearly failed from want of food, there being but two days consumption left for the few worms which lived to reach St. Helena.

It does not appear on the records, that any eggs of the European silk worms were ever forwarded to India under the above suggestion; but about the same period (1771), the Bengal Government, at the recommendation of Mr. Robinson, applied for, and received from China a quantity of the China silk-worm, it being supposed that they produced stronger silk and in larger quantity.

These worms were distributed throughout the silk districts, and may have been the means of improving the breed in Bengal. Mulberry-plants were likewise brought from China and planted in the Governor-general's garden, with a view to the improvement of the food, but from some prejudice of the natives they were never generally cultivated.

In 1773, the Court repeated their injunction to the Bengal Government to give the greatest possible encouragement to the cultivators of the mulberry-plant and to those employed as winders. To

To those who might engage in the culture long leases were to be granted, and they were to be exempted from arbitrary fines and taxes. The Court on the occasion suggested, that the country to the eastward of the Poddah was best adapted for the purpose, for should Bengal be invaded by the Mahrattas or other native powers, it was not possible that the enemy could cross that great river. This precautionary recommendation was called for, by the fact of an invading force having, on one occasion, destroyed the mulberry plantations and dispersed the weavers.

In 1774 the Court were advised by the Bengal Government, that the Italian method of winding silk was so far introduced as to promise success in a reasonable time, and that although it had not then answered the expectations formed from its introduction, the most sanguine hopes were entertained that, in the end, it would make ample amends for the pains that had been taken, as it had found its way into the hands of private merchants.

The Court, in 1775, appointed Mr. William Platell to succeed Mr. Wiss, and the latter gentleman, with two of the Italians, returned to England in 1776. In 1779 Mr. Wiss was appointed

pointed to a fixed situation in the Company's service at home, to examine and report upon the qualities of silks received from Bengal, and to afford such instructions as might be necessary, to enable the Company's servants in Bengal to remedy defects, and render the silk as perfect as possible.

A report of the Board of Trade having declared that Mr. Wiss had, by an assiduity equal to his skill, introduced and established the Italian mode of *winding at one operation from the pod;* the Court presented him with £1,000 as a mark of their approbation. At the same time the Bengal Government was directed to present £100 to A. Della Casa, one of the Italian winders employed at Jungpore. Mr. Wiss continued in the Company's home service for many years, and was eminently useful in furnishing the Residents in India with suggestions for improving their silks.

In 1777 the Bengal Government state in a letter to the Court, that the plans of Messrs. Wiss and Robinson had produced the most beneficial effects, the cost of raw-silk having been lowered, and the provision of it being capable of extension at pleasure. The anxiety of the Court that the

new or Italian method of winding silk in Bengal should have all possible encouragement, continuing unabated, they in the year 1779 sent out as superintendents Mr. J. L. Baumgartner, Mr. J. Brigante, and Mr. James Frushard, of whose competency and skill ample testimonials had been received.

These gentlemen were captured by the French and Spaniards in August 1780; they however were permitted to return to England, and proceeded to Bengal in 1781.

The unfortunate temper of Mr. Baumgartner rendered him unable to conform to the regulations, and meeting with opposition in consequence from the servants employed at the filatures, he discontinued his services to the Company and returned to Europe in 1783. Messrs. Brigante and Frushard remained, and the latter gentleman continued till the time of his death an active and zealous promoter of the improvement of raw-silk.

Hitherto the silk, as well as other portions of the Indian investment, had been provided by the Company by the system of contracts, a system long in practice but open to great abuses. It was at length deemed expedient that a change should be

be effected, and during the administration of Lord Cornwallis contracts were abolished. The mode of providing the investment by the agency system and payment of commission was substituted, and continued in practice for many years. But the Court in 1830, at the recommendation of the Supreme Government, put an end also to this system, and directed the remuneration of the silk agents to be made by fixed allowances instead of a commission.

The very extensive warlike operations then carrying on in India (1781) having caused great pecuniary embarrassment to the Company, the usual allotments for the provision of the investment for Europe were absorbed, and the hope which the improved quality of Bengal raw-silk had justly raised, seemed, after all the Company's exertions, in great danger of being frustrated. To maintain the capabilities of the factories, prevent the dispersion of the workmen now instructed in the new method of winding, and keep up the silk produce in the Company's possessions, the trade in raw-silk to England, hitherto in the hands of the Company, was ordered to be thrown open.

The Bengal Governme ·d to leave

 the

the trade free to all persons, either in the service of the Company in India, or enjoying their protection, and to permit them to export from Bengal to England any quantities of raw-silk on their private account.

The Company's buildings, filatures, and erections, used in the manufacture of raw-silk, were to be allowed to be rented by the private traders; and if they desired the assistance of the Italian superintendents and spinners, they might avail themselves of their services. But the Company reserved the right of resuming the exclusive trade upon giving two years' notice.

The resolutions of the Court for throwing open the trade could not be immediately carried into effect, in consequence of existing engagements for supplying silk. It was, however, eventually done in 1783, when the Court's license to individuals was published throughout India, and silk the property of private individuals was sent home accordingly.

The continuance of the open trade was, however, but short. In 1785 the Court informed the Bengal Government, that it was their wish to resume the trade; and as it appeared that the Bengal Government, on receipt of the Court's former

former orders, had adopted a mean between relinquishing the trade and giving it up to individuals, by investing fifteen lacs in silk on the Company's account, and by permitting a participation in the trade to individuals to the like amount, it was presumed that the filatures were yet in the Company's possession, and that there would be no bar to carrying the Court's wish into immediate effect. But if existing engagements prevented such immediate resumption, the Government was to take measures for bringing this branch of the investment back to its former channel without injury to individuals.

The intention of these orders was not to confine to the Company exclusively the manufacture of raw-silk in the Bengal provinces, but merely to resume the right of exclusively bringing it home from India, and to revoke the privilege formerly given to the Company's servants and others, of sending the article to Europe on their own private account.

On resuming the exclusive trade, the Court, after having consulted experienced persons in this country as to the quantities of silk required for the home manufacture in the various channels of consumption, directed an annual provision of 540,000

540,000 small pounds: but from a variety of unfortunate events annually succeeding each other, such as dearths, storms, inundations, &c., it happened that in no one year from the issuing of this order until 1793, was the Government enabled to carry it into effect. Some of the calamities above alluded to were thus referred to, first by the Board of Trade, in a report dated the 23d December 1789.

"Since the month of July 1787 there has been nothing but disappointment. The too early rains of that season, the dreadful storms of November following, the inundations, droughts, and other occurrences of 1788, and the hot winds of 1789, have reduced the produce of silk, and raised its price to an extremity probably without example in the country; certainly so within the period of the English Government. In this progressive course of calamity, the Board have more than once been driven to consider whether they shall entirely stop the Company's purchases of raw-silk."

In 1791 the measure of opening the trade to individuals was again resorted to, in consequence of the want of commercial funds.

In 1792, the difficulties which obstructed the provision of the silk investment had subsided, and

and the Government apprized the Court,* that "the cause to which they attributed this favourable circumstance, was not only a peculiarly flourishing silk harvest in March 1792, but generally the extension of the cultivation of the mulberry, which had flourished so well, in consequence of the increase of the Company's investment of filature silk, and the regularly returning advances of money which it occasioned to the husbandman, that the Custom-house accounts exhibited a considerable export of silk into different parts of Hindostan, by land as well as by sea, both to Madras and Bombay."

The imports of raw-silk from Bengal, from 1792 to 1835, are exhibited in the Appendix A.

It has been shewn, that the introduction of the Italian method of winding silk in Bengal may be dated from about the year 1770, but it was not until 1775 that the new mode could be considered as in full operation. In the intermediate period much time was unavoidably taken up in erecting buildings, fitting up furnaces, reels, &c.; and in instructing the natives, whose long established prejudices it was difficult to remove, so scrupulously averse

* 27th April 1792.

averse are they to innovations, of any kind. To these impediments may be added another: the country was recovering but slowly from the calamitous effects of a dreadful famine, which had swept off millions of the lower class of inhabitants, and occasioned a very considerable defalcation in every species of production. From these causes the imports of raw-silk from 1772 to 1775 (the filature assortment included) were so circumscribed, as not to exceed on an average 187,494 small pounds per annum.

The new mode of winding, however, having been sufficiently established, considerable importations of filature raw-silk subsequently took place. From 1776 to 1785, the imports of all kinds of silk from Bengal appear to have averaged annually 560,283 small pounds, while the importations of silk from Italy, Turkey, &c. did not exceed 282,304 pounds.

The result of the successful efforts for improving Bengal silks was quickly seen, by the decline of importations from Aleppo, Valentia, Naples, Calabria, and other places in the Mediterranean, so that, in no long period, the whole of the silks used in this country, were furnished only from the Northern provinces of Italy, from Bengal, and China.

At

At the time when the produce and quality of Bengal raw-silk had thus advanced, the state of trade at home bore a most unfavourable aspect. The revolution in France had given a severe check to commercial activity. Its influence was felt, not only in this country, but in every market upon the continent universal alarm prevailed; mercantile transactions were in a great degree suspended, and manufacturers in general were nearly at a stand; from the failures that ensued confidence was lost, and commercial credit was reduced so low, that Government felt it necessary to resort to the unusual expedient of assisting the merchants with a loan of Exchequer-bills to a considerable amount. The silk trade participated largely in the prevailing distress, and experienced indeed a more than ordinary depression.

Great numbers of weavers were out of employ; the usual buyers were loaded with heavy stocks of unsaleable goods; the Company had a large quantity of silk in warehouse unsold; and the importations in the approaching season were expected to be considerable. To guard against future losses, and if possible, to secure to Bengal the advantages anticipated from increased production, the Court were led to adopt the further

measure

measure of causing the surplus quantity of silk, beyond what the markets could take off in the raw state, to be thrown into Organzine, with a view to its being brought into use as a substitute for part of the thrown silks which were then imported from Italy.

Accordingly two hundred bales of the best assortment of Bengal silks were delivered to the throwsters, and after being organzined were put up at the Company's sale. Much opposition to this measure occurred at the time, and the legality of the Company's proceedings was strongly combated by *buyers interested in the Italian importations*.

The object, however, was too important, and the prospect too flattering to be hastily abandoned. Further trials were made, and in proportion as the article became more known, and the views of the Company better understood, much of the prejudice that had been excited against the measure subsided.

In February 1796 the reputation of Bengal organzine silk was so far established, that a considerable number of the most eminent houses in the trade united in addressing a memorial to the Court, in which they stated, "that the Bengal raw-silk

raw-silk could be successfully brought into use in their respective manufactories to a very considerable extent, in lieu of a portion of the thrown silk supplied from Italy, and hoped the Court would persevere in the measure, as it would not fail of proving highly beneficial to the national interest."

The Court being thus warranted to persevere by the call of the principal consumers, whose testimony was sufficient to silence all doubts with regard to the propriety of the measure, and it being satisfactorily established that Bengal raw-silk could be thrown into organzine in this country, with every prospect of advantage both to the Company and to the public, orders were issued to extend their consignments of silk from Bengal to 4,000 bales per annum.

The Court also communicated* to the silk trade its intention, of continuing, from time to time, to have recourse to throw Bengal raw-silk to as great an extent as might be expedient. But to remove all apprehension that the Company might hereafter engage in throwing their silk into singles, trams, sewing-silks, and other articles, the Court thought proper publicly to announce,† that in

Minutes, 30th Dec. 1796. † Minutes, [illegible] b. 1796.

in adopting this plan, they had no view whatever beyond creating a sale for the large additional quantity of raw-silk which the Bengal provinces were found to be capable of affording, and that it was their intention to cause to be thrown into organzine, only such surplus quantity as they might import, beyond the quantity required for the supply of singles, trams, &c., there being no wish to divert any of the operatic processes in the silk manufactories out of their usual channels. It was well known at that time, that the silk-mills had been frequently at a stand for want of employment, the imports of thrown silk into this country from Italy, &c., being on an average 388,990 pounds, which displaced the manufacture of an equal quantity of organzine in this country. The Company persevered in this measure, with advantage both to seller and buyer, for many years. The quantities of raw-silk thrown into organzine on their account will be seen in the Appendix B. page 7.

The object of the Court in introducing Bengal silk for the purpose of being thrown into organzine, having been achieved, it was deemed expedient, in 1806, to consider the propriety of gradually abandoning the practice, and of returning to the

the old and regular plan of exposing the whole of the Company's importations to sale in the raw state, leaving to individuals engaged in the trade the choice of applying it to such purposes as the demand of the market might require. But the silk trade being, at the beginning of the year 1808, in great want of the means for carrying on its operations in consequence of all European sources of supply being entirely stopped,* the Court, with a view of affording assistance to the manufacturers, determined to limit, for a time only, the quantity of silk intended to be thrown into organzine, without totally abandoning the practice. It was accordingly continued to a partial extent until 1814, when it was finally relinquished, the Court being of opinion, that the causes which originally rendered it expedient no longer existed, and that consequently a return to the old practice might be safely and beneficially effected.

From the period when the first attempts were made by the Company, to prove that Bengal silks of the higher qualities might be advantageously thrown into organzine, and used instead of Italian silks in certain branches of manufacture, the Court was unremitting in enjoining upon the Bengal Government,

* Berlin and Milan Decrees.

Government, the necessity of using every endeavour to increase the quantity, and improve the quality of the finer threads (or sizes) of the filature provision. It has been already stated, that the entire silk importations consisted of two general descriptions, *the country wound* and the *filature wound:* the former being purchased of the natives in its prepared state; the latter, for the most part, reeled from cocoons bought by the Company's agents, in winding-houses possessed or hired by the Company. A considerable and permanent extension of the consumption of Bengal raw-silk in Europe was considered to depend chiefly upon the improvement and augmentation of the filature assortment, especially in the description suitable to be thrown into organzine and fine tram.

The great distress of the silk manufacturers of Great Britain in 1808,* from the almost entire cessation of the imports of Italian silks, called upon the Court in that year for some extraordinary efforts to increase the Indian supply. The Bengal Government was accordingly directed to place the Company's filatures and cocooneries in a state which

* In May 1808, the Silk trade held a meeting at Weavers' Hall, at which the resolution quoted in the Appendix C was passed.

which should make them competent to work off all the cocoons of the silk districts which should be procurable; that as large a portion as possible of this supply should be provided of the fine sizes; and to arrange, as soon as circumstances would admit, that the whole of it should consist of the filature-wound class. At this period, also, in order to promote the great object of improvement, the Court caused the instructions for reeling silk, furnished by their Silk Superintendent, Mr. Wiss,* to be printed, and copies of them to be sent to Bengal, for the direction of the different officers concerned *in the provision of the investment.*

In 1812 great disappointment was experienced from the deficiency of the consignments of raw-silk. The supply from Italy being simultaneously diminished, the prices of the article in the home market rose to an unprecedented height. To alleviate this evil, the Court directed the local Government to purchase private filatures, or take them on long leases, or in the event of its being found more economical to erect filatures, and furnish them with all necessary appendages, so that they should be equal to the preparation of a considerably augmented supply. The Court intimated

* For Mr. Wiss's Instruction see Appendix C.

mated a hope, that the provision under this order would not eventually fall far short of 8000 bales, of which the larger part should, of course, consist of filature silk, and the remainder of country wound. The views which led the Court to issue these directions are explained in the Appendix D.

In conveying these orders, the Court, adverting to the system under which the filatures were supplied with cocoons, directed the Government to consider whether it might not be practicable, to a certain extent, to establish mulberry plantations on their own account, so as to render the investment in a considerable degree independent, of other sources of supply.

In order to remove some uncertainty which had prevailed, as to the exact sizes or threads of the different distinctions of filature silk, desired to be provided, the Court in 1816 transmitted to Bengal sets of regulating musters, marked with the names of the factories to which they respectively applied, and directed that the silk should in future be manufactured strictly in conformity with them. On this occasion the Court's order was for 5,500 bales, and the whole of it if possible was to be furnished of filature-wound silk. The quantity which it was desired to derive from each

factory

factory, and the proportions of the different divisions of the fine, middling, and coarse sizes, are shown in Appendix D.

The Court also desired, in their Commercial letter to Bengal of the same year, that a small quantity of each species of cocoon reared in the vicinity of their several factories should be sent to England, with descriptions of the different kinds and statements of their relative abundance. The cocoons arrived in 1819 and 1820, but for the most part in a damaged state. At the same time were received copies of reports from the Board of Trade to the Bengal Government, containing information upon the varieties of the Bengal silk-worms furnished by the different Commercial Residents. Extracts from these reports are given in the Appendix E, and subjoined to them is a report furnished some years preceding from the Resident at Soonamooky, on the tussah, or wild silk-worm, from the cocoons of which silk occasionally had been furnished in small quantities for the Company's investment.

In the year 1823, in consequence of the extension of the Company's filatures in conformity with the Court's directions of the preceding years, and of the probability that the whole, or nearly

the whole, quantity of silk required might at length be supplied from the novi reels, directions were given, that no provision of the country-wound species (the sale of which had become unprofitable) should thenceforth be made for the investment. The order for filature silk at this period was for 7,000 bales, on which scale it was continued for several years. In the account (Appendix F) are shown the quantities actually obtained from each Silk Residency, from the year 1808 to 1834.

In 1826, the attention of the Court was drawn to a project for improving the cocoons, proposed by the Commercial Resident at the Santipore silk factory. The measure suggested was, that a certain quantity of mulberry land should be cultivated, and the silk-worm should be reared, and cocoons formed, under the immediate superintendence of the Resident.

It will be recollected, that in 1812 the Court expressed a desire, that some experiments of a similar nature should be made; but the establishment of mulberry plantations on account of the Company being regarded by the Board of Trade as liable to much objection, no measures were adopted at that time in furtherance of the suggestions.

The

The trial now sanctioned by Government of the "neez," or domestic cultivation at Santipore, was approved at home, and the experiment was continued until 1830. It was then found that the results attained were not equal to the expense incurred, and the plan was consequently abandoned.*

In 1827, the Board of Trade having received in that year proposals for bringing into use at the Company's filatures a new reel for more perfect winding of filature raw-silk,† for which a patent had been granted to the inventors, Messrs. Heathcoate and Co., of Tiverton, Devon., recommended to Government that a trial should be made of it at the Rungpore and Santipore filatures, in the hope that it might be the means of effecting important improvement in the quality of the silk. The recommendation was approved by Government and thirty-six bales were wound by means of this reel, and consigned to England in the years 1828-9.

The silk so reeled, however, was not considered by the buyers at all superior to that prepared by the former process, nor did it command higher prices at the Company's sale.

The agent of the patentee, Mr. Wilkinson, having

* See Appendix G. † See Appendix H.

having returned to England some months after the institution of the experiment, it was continued only for a short time after his departure.

It has been already stated, that the Court's annual order for raw-silk had, since the year 1823, been for 7,000 bales. It was not, however, until the year 1827, that the consignments to England became equal to the quantity ordered. In that and the three succeeding years, the quantity was rather exceeded. This effect, which was productive of much benefit to the silk manufacturers of Great Britain, was not however attained without a serious increase of the cost of the article to the Company; insomuch, that the invoice price of the import, on the average of these four years, amounted to the large sum of Sa. Rs. 76,30,000 per annum.

The provision of the silk investment was effected by means of advances of cash issued from the several factories to a class of native agents called Pykars, whose business it was to procure cocoons for the use of the filatures, and in some cases to deliver a proportion of prepared silk. Advances in some instances were also made directly to the growers of cocoons, and to contractors for silk, without the intervention of the Pykars. When the agency

agency of the latter was resorted to, the Pykars made advances to the cultivators of the mulberry and rearers of silk-worms. Previously to the year 1827, it was the custom to make a settlement with the Pykars for each bund, respectively, but not until all the cocoons of the bund had been wound into silk, when the Resident proposed such price as he judged reasonable, and after the approval of the Board of Trade, the account was arranged, without reference to the prices paid at the other factories for silk of the same bund. In 1827 the Board divided the silk districts into circles, and resolved that one rate of price only should be allowed at all the factories in each circle; but in 1831, with the view of more effectually checking the great advance in the price of silk, it was determined that in each year, before the commencement of the investment season, it should be announced to the Pykars and others concerned in the provision of cocoons or silk, that no more than certain specified prices would be paid for the produce of the several bunds of the year. The rates fixed by the Board on this occasion are stated in the Appendix I.; in which will also be found an account of the cost of the silk per bale from 1817, when the price began to rise, until 1835, in which

and

and the three preceding years, by the operation of the new system, it was brought back to about its former level.

In 1831 the Court, in consequence of the attention of the Bombay Government being about that period directed to the cultivation of raw-silk in the territories under its charge, informed that Government, that instructions had been given to the Governor and Council at St. Helena (where European silk-worms and mulberry plants of the best kinds had been introduced) to transmit supplies of both to the Bombay Presidency; and that the Company's agent at Malta had been directed to provide a quantity of the eggs of Italian silk-worms, for delivery to the Earl of Clare, on his arrival at that place, his Lordship having expressed a desire to take charge of them on his going over-land to assume the Government of Bombay.

It was directed, that as soon as the culture of worms and plants should be naturalized on that side of India, information should be conveyed to the Governor-general in Council, in order that the benefit which the Court hoped would be derived from the experiment might be extended to the Bengal Presidency.

A few specimens of raw and prepared silks produced

produced in the Bombay territories having been transmitted home in 1827, the Court took this opportunity of adverting to its sale in London, and the opinions entertained of it by the trade.*

In October 1832 the Supreme Government received from the Governor and Council at Bombay a packet, containing a supply of eggs from the Italian silk-worm (bred at St. Helena). These were placed under the care of the Board of Trade, who were directed to cause the worms to be carefully reared and the produce kept distinct, for the purpose of its being ascertained whether they were of a superior quality to those used ordinarily in Bengal.

Cuttings also of the Italian white mulberry, raised in the Company's Botanical Garden at Dapooree, were subsequently transmitted to Bengal, portions of which, and of the eggs from the Italian silk-moths were forwarded by the Board of Trade to the Agricultural Society at Calcutta, and to the Residents at the principal factories; and information having been requested by the Bombay Government, regarding the different species of the mulberry, and the mode of its culture in use in Bengal, reports upon these subjects were called for

Appendix K.

for from the Superintendent of the Company's Botanical Garden at Calcutta, from the Secretary to the Horticultural Society and the Commercial Residents at the Company's factories at Bauleah, Hurripaul, Commercolly, and Soonamooky. Copies of the reports furnished on this occasion on the several subjects referred are given in the Appendix K.

The Governor-general in Council, in his letter of the 10th April 1832, informed the Court, that he had sanctioned a proposal of the Board of Trade, for establishing an experimental filature at Howrah near Calcutta, for the purpose of instituting comparisons and experiments, with a view to improve the manufacture of raw-silk.

New methods of constructing the filature-basins and furnaces had been devised by the Commercial Residents at Radnagore, Commercolly, and Gonatea, and by other gentlemen. All of them were designed to afford similar advantages: "saving of fuel and labour, superiority over the old filatures in the mode of supplying the basins with water, a greater degree of cleanliness in the interior of the filatures by the exclusion of smoke, and cheapness as well in their original construction and adaptation." It appeared desirable to try, by a series of

of experiments under the immediate supervision of the Board, the comparative merits of the several inventions.

The Court's approbation of the establishment of the experimental filature was conveyed in the letter to the Bengal Government of the 12th September 1832, and it was suggested that the ground belonging to this filature, might serve as a nursery for preserving the Italian mulberry-plants and silk-worms sent from Bombay, and to rear cocoons for experiments.

The result of the trials made at the filature in question, led the Government to adopt the recommendation of the Board of Trade, that the pottery ghye (furnace and basin) invented by Mr. Colin Shakespear, the Commercial Resident at Gonatea, should be the standard one to be substituted on all occasions of renewing basins, and should be forthwith constructed in place of those previously in use in all factories, where there might appear advantage in carrying the alteration into immediate effect. Descriptions of the new inventions, and of the experiments made at the Howrah filature, will be found in the statements in Appendix L.

In October 1833 further experiments at this

filature were discontinued, and it was placed under the charge of the Rádnagore Resident, to aid in furnishing the investment from his district.

The Bengal Government was informed by the Court's letter dated 23d July 1833, that under the provisions of the Bill then in progress through Parliament, the Company's trade with India and China would cease, but that the purchase of silk was to be continued for 1834; and by the Court's letter 29th January 1834 it was intimated, that the provision of silk should also be carried on in 1835, at such filatures as should then remain in the Company's possession; but Government was directed to take measures for the disposal of the silk factories with as much expedition as was consistent with prudence. The injunction to use prudence being understood to refer less to the pecuniary gain or loss of the Company, than to the interests of the people and to the keeping up the supply of silk for this country, it was declared the silk-growers should not suddenly be deserted, unless there were capitalists ready to carry on the filatures, even though some loss should be incurred in protecting them.

In consequence of these instructions, attempts were made in 1835 by the Bengal Government to dispose

dispose of the filatures by public auction; but up to the date of the latest advices the greater part of them still remained in the Company's hands. The Government, however, considered it to be consonant with the orders for the gradual abandonment of the trade in raw-silk, to limit the further supply to the quantity which could be manufactured at the Company's own filatures. It resolved, therefore, that the hired native filatures should be given up, and the purchase of silk by contract discontinued, from which two sources a portion of the investment had always been derived.

In the Appendix M will be found statements of the number of filatures, both Company's and Hired, as they stood in March 1832.

LIST OF APPENDIX.

Appendix (A). .... page 1 to 4
Do. (B)........................ 5 — 8
Do. (C)........................ 9 — 26
Do. (D). .... 27 — 34
Do. (E). .... 35 — 56
Do. (F). .... 37 — 60
Do. (G). .... 61 — 76
Do. (H). .... 77 — 88
Do. (I). .... 89 — 95
Do. (K)........................ 96 — 179
Do. (L). .... 181 — 211
Do. (M). .... 213 — 222

(A.)

ACCOUNT

SHEWING THE

QUANTITIES OF RAW SILK

Imported from Bengal, from 1792 to 1835 inclusive.

AN ACCOUNT *showing the Quantities of Raw Silk imported into London from Bengal, on account of the Company, from* 1792 *to* 1835 *inclusive, together with the quantities warehoused by the Company of the Imports by Private Merchants.*

Years.	Company's Bengal Raw-Silk Imported.	Private Bengal Raw-Silk imported warehoused by the Company.	Total Company's Import and Private Import warehoused by the Company.
	lbs.	lbs.	lbs.
1792	372,553	28,892	401,445
1793	677,988	91,885	769,873
1794	494,487	—	494,487
1795	379,543	12,984	392,527
1796	340,060	21,046	361,106
1797	88,219	—	88,219
1798	352,780	—	352,780
1799	643,803	1,618	645,421
1800	454,600	—	454,600
1801	310,368	—	310,368
1802	78,950	35,794	114,744
1803	336,189	68,904	405,093
1804	415,917	205,793	621,710
1805	460,303	375,601	835,904
1806	235,215	173,308	408,523
1807	225,984	267,601	493,585
1808	325,243	53,225	378,498
1809	116,124	46,623	162,747
1810	373,598	211,120	584,718

Years.	Company's Bengal Raw-Silk Imported.	Private Bengal Raw-Silk imported warehoused by the Company.	Total Company's Import and Private Import warehoused by the Company.
	lbs.	lbs.	lbs.
1811	258,953	145,803	404,756
1812	558,862	423,565	982,427
1813	831,891	252,459	1,084,350
1814	722,727	114,239	836,966
1815	522,810	279,476	802,286
1816	381,215	398,549	779,764
1817	373,459	128,876	502,335
1818	758,116	402,860	1,160,976
1819	553,105	197,922	751,027
1820	811,875	259,572	1,071,447
1821	817,625	172,838	990,463
1822	845,382	197,235	1,042,617
1823	850,668	310,518	1,161,186
1824	660,012	271,637	931,649
1825	699,230	220,206	919,436
1826	898,388	338,635	1,237,023
1827	926,678	99,361	1,026,039
1828	1,039,623	96,686	1,136,309
1829	1,129,710	258,044	1,387,754
1830	1,096,071	90,092	1,186,163
1831	1,030,280	64,597	1,094,877
1832	750,828	205,625	956,453
1833	698,851	52,129	750,980
1834	757,517	53,124	810,641
1835	721,509	6,026	727,535

(B.)

QUANTITIES

OF

RAW-SILK

THROWN INTO ORGANZINE,

ON ACCOUNT OF

THE EAST-INDIA COMPANY,

From 1794 to 1815 inclusive.

QUANTITIES *of* RAW SILK *thrown into Organzine on account of the East-India Company, from* 1794 *to* 1815 *inclusive.*

Year.	Bales.	lbs.
1794	29	4,214
1795	125	18,132
1796	190	25,948
1797	150	19,961
1798	69	9,085
1799	120	16,426
1800	158	20,511
1801	243	32,691
1802	197	29,717
1803	181	25,618
1804	312	45,407
1805	191	27,492
1806	376	51,847
1807	309	40,620
1808	235	29,652
1809	92	11,485
1810	106	13,869
1811	104	13,547
1812	88	10,883
1813	36	4,380
1814	84	10,796
1815	50	6,434
	3,445	468,715

(C.)

1. Extract Letter from the Court of Directors to the Governor-general in Council, Bengal, dated 20th January 1808, for increasing production of Raw-Silk.

2. Ditto .. ditto .. 8th April 1808.

3. Resolutions of the Silk Manufacturers, at a Meeting held at Weavers' Hall, the 21st May 1808.

4. Description of the Manufacture of Country-wound and Filature-wound Silk.

5. Wiss's general Instructions for winding Bengal Raw-Silk after the Italian Method.

No. 1.

EXTRACT LETTER *from the Court of Directors to the Governor-general in Council, Bengal, dated 20th January* 1808.

The systematic rigour with which the decrees of the enemy, interdicting all commercial intercourse between Great Britain and the Continent, are now enforced, has occasioned an entire cessation of the customary importations of Italian raw-silk into this country; it has become, therefore, matter of great moment, under this deficiency, that the manufacturers should derive as great assistance as possible from improved and augmented supplies of that article from Bengal. We consequently enjoin you to employ every effort to provide the entire quantity of four thousand bales, ordered in our letter dated 29th May 1807; and in order to effect fully this provision, we direct that, in case of deficiency of funds, you transfer to the silk investment *any* amount from the appropriation to the supply of Bengal or Coast piece-goods, which may be requisite to complete it. But, in consideration of the altered proportion of the demand for the different descriptions occasioned by the failure of the Italian imports, we desire that the limited indent for the Bengal wound silk (*viz.* five hundred bales) be on no account exceeded, and that

that of the remaining quantity of the filature assortment, instead of observing the proportions assigned in the indent, as great an increase be made to the provision of letter A., of five to six cocoons, as the state of your filatures, under every exertion will admit. The residue of the indent may be furnished of the letters B. and C., in the proportions which those descriptions bear to each other in the former scale, or as nearly so as circumstances will admit.

No. 2.

EXTRACT LETTER *from the Court of Directors to the Governor-general in Council, Bengal, dated the 8th April*, 1808.

Our letter of the 20th January last will have apprized you, that in consequence of the customary supplies of raw and organzine silk from Italy, being entirely withheld from this market, it has become a matter of the most serious importance, that ample quantities of the material for carrying on so very considerable a branch of British manufacture as that of silk, should be afforded from Bengal. The instructions given on that occasion, had reference solely to the provision for the current season, as answering to our indent of 29th May 1807, and we rely with confidence they will have had such weight, as to ensure our not being disappointed

disappointed in a single bale of the four thousand, then ordered to be provided.

The quantity of raw-silk which, on the basis of the suppositions* contained in our advice of the 20th January 1808, may henceforth be annually required from Bengal, will greatly exceed, not only every instance of actual importation, but also the amount of every preceding indent. Six thousand, or perhaps eight thousand bales per annum, (of which, by far the greatest proportion will be required of the finest quality) is not more than the regular supply of this market would demand; it is expedient, therefore, that our Board of Trade should immediately inform itself of the capacity of the several factories, in their present state, to furnish a very increased annual provision; and if they should, under their actual establishment, appear incompetent to the augmented supply, we direct that the Board will adopt the necessary measures for placing the filatures and cocooneries in the most perfect state, taking care they are furnished with furnaces, spinning and reeling machines, equal to winding the full quantity of cocoons which may be expected to be furnished in the several silk districts.

To give additional facility to the Residents at our factories in the execution of the great purpose of

* Continued cessation of Italian importations, increased supply of Bengal silk required.

of improving our raw-silk investment, we have caused the instructions of our intelligent Superintendant, Mr. Wiss, on this subject, to be printed, copies of which useful work have been transmitted you by the ship *Hugh Inglis*, in the course of this year 1808. We direct our Board of Trade to furnish the Residents at the several silk aurungs with an adequate number of these papers, and to require that they will give them the most precise and unvarying attention.

As, probably, with respect to the subordinate filatures, the Residents themselves cannot at all times exercise a personal superintendance, it may be desirable that the instructions should be translated into the Native languages, for the information and direction of the Native servants who are entrusted with the care of the minor establishments. At all events, the latter must be made acquainted with the substance of these orders, and held responsible by their superiors for the strict execution of them.

No. 3.

RESOLUTIONS *of the Silk Manufacturers, at a Meeting held at Weavers' Hall, the* 21*st May* 1808.

Resolved Unanimously, That Bengal silk was become highly necessary in many branches of manufacture, and that from experiments lately made, it

it is found fit for purposes to which it had not before been thought suitable.

Resolved, That the most judicious and active measures should be immediately adopted for the further improvement of the quality of Bengal Silk, and the raising and bringing over a greatly increased quantity.

Resolved, That a Committee be appointed to confer with the Chairman and Deputy Chairman of the East-India Company.

No. 4.

DESCRIPTION *of the Manufacture of Country-wound and Filature-wound Silk.*

COUNTRY-WOUND SILK.

This silk appears to have been prepared by the following method.

The chassars, or rearers of the silk-worm, wind off the cocoons in earthen basins (with the aid of cow-dung as fuel instead of wood,) upon the common Bengal nuttahs, or reels made of bamboo, the thread so reeled being called putney. Fine and coarse threads are wound in the same skein indiscriminately, and parts of the husk frequently introduced to increase the weight; it is hence necessary to have the putney rewound. This is first done on bobbins, in order to preserve the different degrees

degrees of fineness. The silk is then wound from these bobbins upon a large reel, to separate and distinguish the colours of each assortment, and is taken off as soon as dry, to be twisted into skeins.

FILATURE-WOUND SILK.

The machine for reeling, introduced by Mr. Wiss about the year 1770, appears to be the same as the Piedmont reel, described in the treatise on the silk manufacture in Dr. Lardner's Encyclopædia, page 183; except as to the portion of it alluded to in Mr. Wiss's instructions on the "double crossing machine," with which the Piedmont reel is not furnished.

The Court directed the following plan of instructions for reeling silk, prepared by Mr. Wiss, to be printed in September 1807, and copies to be sent out to Bengal, with orders that the different regulations should be carried into execution at their filatures.

No. 5.

General Instructions *for the further improvement of the Italian Raw-Silk Filature in Bengal.*

1. The Resident of the Factory must make it a particular object of his attention, to have a great quantity of water saved in reservoirs, where it may settle and become perfectly fine, as such clear water

water facilitates the winding off the cocoons, and gives a rich gloss and brilliancy to the colour of the silk.

2. Particular care should be taken to have always a large quantity of dry wood ready for the use of the filature, so as never to be exposed to the necessity of serving the spinners with green wood. The consequence of using the latter would be loss of time and diminution of produce, because the spinner cannot, with a fire of green wood, keep the water in that equal state of temperature which is necessary for winding off the cocoons. Whilst the water is slowly heating the spinner is hindered, and every time he is obliged to throw a fresh handful of cocoons into his pan, the former cocoons, from having been kept therein too long, will open into knots on the reel, or sink to the bottom of the pan, and when water has passed through the cocoons, so that they can no longer swim, they will yield no more silk. It must also be noticed, that a furnace will consume a greater quantity of green wood in one day in making a less quantity of bad silk, than of dry wood in producing a greater quantity of better silk. It is very necessary to keep the pan constantly full of water, in order to preserve to the silk a fine colour; and it is absolutely requisite that the spinner be enabled, at pleasure, to diminish or increase his fire according to circumstances, which can only be done with dry

3. No

3. No cocoons should be received into the factory from the chassars without being stript of the fuzzy silk, which consists of the first threads thrown out by the worm, and by which it hangs its cocoon. This will cause very little inconvenience to the chassars, and will prove of great advantage to the Company, because the cocoons will thereby be less liable to grow mouldy, the air will have a free access to them on the shelves, and it will be more easy to turn them. The spinners will also more readily get the end of the thread, and the silk will be cleaner.

4. Damaged cocoons should be carefully taken out from the good ones as soon as they come to the factory, and daily, after they are placed on the shelves, this selection must, on no account, be omitted, as every cocoon that is bruised, or in which the worm has been squashed, will spot as many good cocoons as come in contact with it. Such cocoons will grow mouldy, foul the water in the pan, and cause the silk to be of a bad colour.

Water thus fouled by the substance of the insects which have been squashed, soon becomes very thick, therefore can no longer be fit for diluting the gum of the sound cocoons, so far as it is necessary to facilitate the winding them off, which makes them run up to the iron, stop its holes, and frequently occasions the threads to break, whilst the twisting-cross is as often pulled asunder; consequently, the spinner is often obliged to gather the

the thread with his wisk, by which means the quantity of coarse silk (fit only for carpetting) will be increased, and the quantity of good silk diminished.

If the damaged cocoons be reeled off immediately and daily as they are picked, before they are pierced by an insect which is bred from the fermentation occasioned by bruised cocoons, or those in which the worms die before they can be killed by the heat of the oven, they will yield a quantity of coarse silk, fit for the Indian market.

But as good cocoons may turn bad by being kept too long, and as it is not possible to bring into silk the whole quantity which each crop produces in less than six or eight weeks, care should be taken that the cocooneries be very roomy and well aired. The Resident of the factory must also attend (especially during the two or three first weeks of collecting the cocoons) to the placing of them properly on the shelves. He must take particular care that no greater depth than four or five inches of cocoons be placed on one shelf, and that they be regularly turned once or twice every day, whilst the sun is above the horizon. Due attention to this point will prevent the cocoons from growing mouldy, and will render the silk of a fine colour, from the beginning to the end of the season.

5. The advantage resulting from killing the worm in the cocoon by means of a hot oven, is so

 fully

fully acknowledged, that the Residents should refuse buying those cocoons in which the worm has been killed by the heat of the sun. The sun, scorching as it is in Bengal, burns the thread, weakens it, crisps it, tarnishes the colour of the silk, and renders it worse in the hand of the dyer.

The heat of the oven, by which the worm is killed within the space of one or two hours, helps to strengthen the substance of the gum. The worm being sweated by the heat of the oven, the remainder of its gummy substance, which oozes through the threads of the cocoon, gives a greater degree of consistency to the silk.

6. As cocoons are more liable to grow mouldy in the rainy season, and are of a worse quality, the silk should neither be spun too fine nor too coarse at that time.

If it be made of five or six cocoons, it will occasion a prodigious waste in winding off at the mill, owing to the bars of the reels being too hard for so slender a thread, which cannot be loosened therefrom without breaking; and should it be made of from eighteen to twenty cocoons, the silk will be black and musty, for want of time and air to dry it on the reel, which defect occasions a considerable difference in the price at the sale in England. Therefore the Residents of the factories should cause their silk of April, May, June, July, and even August, to be spun in the best weather of seven or eight cocoons, and of from nine to ten

cocoons,

cocoons, and in the worst weather of twelve to fourteen cocoons.

April and May may be reckoned the best weather, because the cocoons then received at the factory are the produce of the preceding dry months. From September to the end of March, the silk should be spun of five or six cocoons and of eighteen to twenty cocoons.

7. Samples should be spun every week by an able spinner, in the presence of the Resident, the Deputy, and of all the overseers of the factory.

N. B. Five new cocoons will produce the exact size of the thread fit for fine organzine; but the spinner must, on no account, omit to add one or two cocoons at a time, as soon as the threads break or become half-wound, and never to forget that two half-wound cocoons are not more in substance than one fresh cocoon; therefore he may safely have at a time three new cocoons and five or six old ones, which will not make the thread coarser than five new cocoons. The same proportion is to be observed in spinning every other quality of silk before-mentioned.

7 to 8 cocoons	is to be	of	7	new ones at least.
9 to 10	..	do. ..	9	..	do.
12 to 14	..	do. ..	12	..	do.
18 to 20	..	do. ..	18	..	do.

or an equivalent, by adding a greater number of old cocoons when wanted, or of new ones, agreeably to circumstances.

When

When any of the qualities above described are spun, at the receiving of them from the hands of the spinners, every evening, they should be carefully compared with the samples which had been ordered to be spun that day; in order to ascertain whether they have kept strictly to the rules prescribed.

The only way to prevent different sizes of silk in one bale, would be not to order at one time two qualities of silk to be spun throughout the whole of the filature, but only one sort. As, for example, November and March bund being the greater crops of the year, the silk at the beginning should be spun of from eighteen to twenty cocoons, which will give time to place the cocoons properly on the shelves and to pick the bad from the good ones.

N.B. One hundred, or one hundred and ten furnaces or pans, will produce daily one bale of silk of that quality; but it will require three hundred furnaces to produce one bale of five to six cocoon silk. It is therefore of the utmost consequence, not to begin to spin fine silk until the cocoonery be full, and the chassars slack in bringing their cocoons, when it will be the proper time to order every spinner of the factory to spin fine to the end of the season.

8. The Residents of the factories should take particular care to cease making the five to six cocoon silk in time, that all of that quality may arrive at the Presidency, and be shipped for England,

land, before the rainy season; after which, if the weather continued fine, he may order the spinners to spin any of the qualities of silk described in paragraph 6.

9. The spinners should make a sufficient number of crosses, and turn the double crossing machine accordingly. These crosses make the threads round and give the silk a good body, besides squeezing out the water that rises from the pan.

10. Whenever the thread breaks the reeler must instantly stop the reel, and finding the thread, he must place it under the skein it belongs to, but never attempt to join it by a knot. The new thread that will be handed to him by the spinner must be placed to the string between the two skeins, as they have been taught to do.

11. As soon as the spinner has finished his beat, (that is, when he has spun all the cocoons whose threads have been gathered by means of his wisk), and whilst he is taking all the stript worms out of the pan, which he must do at every beat before he puts in fresh cocoons, the reeler should avail himself of this interval to clean the silk on the reel from the pellicules or innermost coats of the cocoons, which may have ascended with the threads. He must also streighten it under the plaits, by orming the string between the two skeins, and make up his fire.

12. From the beginning to the end, the spinner must be very attentive to keep up the evenness of

his

his threads, and never to add more than one or two cocoons at a throw when he spins fine, nor more than three or four when he spins coarse, otherwise his silk will be knotty and uneven; a defect very much complained of by the purchaser.

13. The silk for samples, spun with the cocoons of the produce of each bund, if spun with the exact number of cocoons, and attention as before directed, will be as perfect as any of the best from Italy, provided the cog-wheels are kept in proper order.

14. Suspecting that the cog-wheels were not exact to the number of teeth, brass models were sent in the year 1800, by means of which the turner could not miss the size of each, but cut the teeth exactly to the number required. That is to say, one cog-wheel of thirty-five teeth, which lies upon the frame and directs the motion of the stick which conveys the silk to the reel; two cog-wheels of twenty-two teeth each, one of them being fixed to the silk reel and the other to the end of the stick which communicates to the thirty-five-teeth wheel. Another is made to contain twenty-five teeth, and is fixed to the other end of the said stick.

The workmen cannot make any mistake except in placing them; which is, the thirty-five-teeth cog-wheel should join with the twenty-two-teeth one at the end of the stick; and the other end of the said stick with the twenty-five-teeth wheel should

should join with the twenty-two-teeth one, which is fixed to the silk-reel.

15. I have no doubt but what has been so often recommended, to have two overseers for the length of a filature of forty furnaces, has been complied with. These overseers are to watch the spinners, that they keep to the quality of the silk directed to be spun. It is their duty to take care

1st. That the silk be made of the exact number of cocoons prescribed.

2d. That the spinners make a sufficient number of crosses.

3d. That they let nothing ascend on the reel that is not crossed.

4th. That there never be too many cocoons at any one time in the pan, lest the threads should become entangled.

5th. That the cocoons be sufficiently cleared of the fuzzy part, in order to obtain a clear silk.

6th. In short, it is their duty to take care that the reelers be kept strictly to their several tasks before-mentioned, and to see that no man remains idle; for if the spinners lose their time, two great evils must ensue, viz. the cocoons in the pan will be wasted, and the overseers will be imposed upon in the quality of the silk; for the idle spinner avails himself of every moment that the overseer is absent, and spins coarse, lest it should be discovered

discovered that he has trifled away his time.

That this has already been the case is evident, because in the middle of the skeins of a silk of five or six cocoons, we frequently find a silk of ten to twelve cocoons, more or less, and the same defects in all other qualities.

7th. Every overseer must be made answerable for the produce of the limited number of furnaces allotted to his care ; and at the delivery of the silk by the spinners every evening, it must be strictly examined by the director of the filature, in the presence of the overseers and spinners, by which means all considerable faults and defects will soon be avoided.

(D.)

1. Extract Letter from the Court of Directors to the Governor-general in Council, Bengal, the 2d June 1812, to increase the production of Raw-Silk.

2. Ditto on Establishment of Plantations of Mulberry.

3. Indent of 5,500 Bales of Filature Raw-Silk, order of Investment, 1817.

No. 1.

Extract Letter *from the Court of Directors to the Governor-general in Council, Bengal, dated 2d June* 1812.

Independently, therefore, of every consideration of commercial advantage to the Company, highly important as such considerations are in the present state of our affairs, the increase and improvement of the culture and preparation of Bengal silk has become a matter of very great consequence to the nation generally. Our motives for issuing order for the continued augmentation of its provision, even in the face of the encouragement lately afforded by means of licenses to the importation of Italian silks, may be therefore concisely stated under the following heads:

1st. Our wish, at every hazard, to rescue the body of British manufacturers from a precarious dependence on the capricious commercial policy of the enemy, and especially our anxiety to afford a full and regular employment to many thousands of the poorer classes, working under British throwsters, who now are, and probably must continue, totally dependent on Bengal raw-silk for that employment, the enemy restricting the export of Italian silk, by license, to organzined silk.

2d. The fair prospect afforded, that under any unfavourable events in other channels of commerce,

merce, raw-silk may constitute the medium of a certain remittance from India to a very considerable extent.

We are aware that, in case of a very great importation of Bengal raw-silk occurring with a similar one of the Italian, such a reduction of price may follow, as shall render our gains by this extensive traffic in the article rather problematical. We feel, however, that we may, in such an event, confidently expect from the equity of His Majesty's Government, such a favourable alteration of duties, as may afford a continued encouragement of the former, and may secure for it, on the combined considerations of cheapness and quality, the permanent preference of the manufacturer.

With such a mass of very weighty considerations pressing upon us, we cannot urge you in too strong terms, to apply the utmost efforts which you can exert to the increase of the production of raw-silk, in order that we may, with the least practicable delay, be placed in a situation to answer the important calls upon us, of which we have now given you a brief faint sketch.

No. 2.

EXTRACT LETTER *from the Court of Directors to the Governor-general in Council, Bengal, dated the 2d June* 1812.

Para. 17. The importance now attached to the silk investment, has led us to consider whether the system under which it is furnished may not be susceptible of improvement. In the present very increasing demand for cocoons which we find prevails in all the silk districts, it is peculiarly desirable to ascertain, whether the provision of the material in this early state is secured for us on a plan the least liable to failure or other objection.

18. The purchases of cocoons, as now made through the medium of native agents, may probably be the most advisable mode, under the present circumstances of the mulberry culture in Bengal, and it has proved hitherto equal to the demands of the present factories. It is, however, evident, that we are exposed by it to all the inconveniences of competition, by which the price is enhanced, and that we possess no powers of control, either as to the selection of the insect, or of the species of mulberry on which it is fed; on both of which points the quality of the silk must ultimately depend.

19. It may be well worthy of serious enquiry, whether it might not be practicable to establish,

to

to a certain extent, mulberry plantations on our own account, which, should the experiment answer the proposed end, might, perhaps, in succeeding seasons be extended, so as to render the public investment, in a considerable degree, independent of other sources of supply. A measure of this nature, while it might operate as a check upon an unsuitable advance in the price of cocoons and ascertain their real cost, would afford facilities for introducing various improvements as to the fibre of the silk, and which there exists little doubt may be successfully applied through the medium of its culture. Conformably with these considerations, we are induced to direct that an experiment of this kind may be made on a moderate scale. In conducting it, we rely that the Board of Trade will avail themselves of every expedient and suggestion, which their own acquaintance with the subject, or the practical knowledge of the officers under their department, can furnish, that may appear calculated to accomplish the important purpose of the undertaking. The different species of worms and mulberries will, of course, engage their attention; among which we desire that the China insect and plant may receive particular consideration.

Indent *of Filature Raw-Silk to be provided in* 1817.

	A.		B.		C.			
	No. 1, of from 4 to 5 Cocoons.	No. 2, of from 7 to 8 Cocoons.	No. 1, of from 10 to 12 Cocoons.	No. 2, of from 12 to 14 Cocoons.	No. 1, of from 16 to 18 Cocoons	No. 2, of from 18 to 20 Cocoons.	No. 3, of from 24 to 30 Cocoons.	Total.
Commercolly...	150	300	200	150	—	—	—	800
Gonatea.........	300	100	200	200	—	—	—	800
Cossimbuzar ...	50	150	50	50	100	150	200	750
Jungypore......	50	100	50	—	100	150	50	500
Bauleah.........	—	200	50	50	200	250	50	800
Malda............	50	50	50	—	150	100	100	500
Rungpore.......	50	100	50	—	100	150	50	500
Radnagore......	100	150	50	—	100	100	50	550
Hurripaul	50	50	—	50	50	100	—	300
	800	1200	700	500	800	1000	500	5500

(E.)

EXTRACT MINUTES

OF

THE BENGAL BOARD OF TRADE,

23d April and 24th September 1819,

ON THE

SILK COCOONS* OF BENGAL.

EXTRACT MINUTES *of the Bengal Board of Trade, 23rd April and 24th September* 1819, *on the Silk Cocoons of Bengal.*

THE LARGE OR ANNUAL COCOON.

Cossimbuzar.

This species of cocoon, as its name implies, is reared only once in the year. In the district of Cossimbuzar it appears to predominate more than at any other of the Honourable Company's filatures. The Resident at Cossimbuzar observes, respecting it, that the March bund silk is produced from this annual cocoon. The March bund at this factory is second with regard to quantity, but first with respect to quality, of all the bunds in the year, because being, as before observed, the produce of the annual cocoon. The Resident states that 150,000 sicca rupees may be realized annually in silk, the produce of this worm.

Bauleah.

The annual cocoon appears to be produced at Bauleah; but the Resident observes, in the enclosure to his letter of the 3rd September 1817, that during that year not a single cocoon of the above description was produced at any of his filatures.

Hurripaul.

Hurripaul.

The same description of cocoons is produced also at the Hurripaul filatures.

The Resident observes, with respect to this cocoon, that it is the most valuable, and yields the best silk. It is reared only once in a year, and the bund comes in about the middle of March, and continues till May or June. The produce of this cocoon is denominated the March bund; it composes about three-eighths of the quantity of cocoons produced at his filatures.

Jungypore.

The Jungypore filatures appear also to produce the annual worm in the January bund.

The Resident makes the following observation: —"The cultivation of this species of cocoons has, notwithstanding every exertion to improve them, become exceedingly precarious and uncertain of late years. This may, perhaps, be attributable, in some degree, to unfavourable weather; but from all the information I have been able to gather, I am more inclined to impute the cause to the worm having degenerated. The whole quantity of this sort of cocoons received in the last January bund, was maunds 551. 32. 12.; and in the most favourable harvest, I do not think that more than one thousand five hundred maunds could be procured."

Radnagore.

Radnagore.

At Radnagore the annual cocoon also prevails. The Resident observes, that the annual cocoons are the produce of one bund only in the year, called the March bund, commencing from the first of that month, and ending about the 15th of April. It is in a favourable season a very abundant and profitable bund, producing (if the cocoons are good) in the proportion of at least two to one of the other species: the average price about one khaun and a quarter per rupee. These cocoons are dried in the sun by the chassars, and kept with great care in their houses, in places least exposed to damp and insects, and may be procured from them to the end of June.

Soonamooky.

The Resident reports, the eggs annuals only generating once a year, are brought out for hatching about the end of January. The rearers calculate from forty to forty-five days from the egg to the complete cocoon, according to the healthiness of the worm, state of the weather, &c. &c. These are the most difficult to rear; much more delicate than the others, and, consequently, require more care and trouble. The silk is, however, of fine fibre and strong, and ought to be very mellow to the feel, of clear yellow colour, with some white.

In

In moderate seasons the produce is estimated at 103,500 khauns, which ought to yield about one hundred and fifty factory maunds of silk.

The Dessee Cocoons.

In the order of importance and value may next be ranked the silk-worm, designated "Dessee," a term importing indigenous: this worm may, therefore, be described in general terms, as the native silk-worm of Bengal. It may be properly considered as only one species: but it is produced throughout the year, and varies in estimation and value, according to the season of produce, and the more nutritious food afforded by the mulberry-plant at one season of the year rather than another. Hence, the worm of the cold weather, or November bund, and that of the dry weather, or March and April bunds, is superior from the more favourable state of the weather, and in consequence of the leaf of the mulberry-plant imparting a greater degree of nourishment at these seasons of the year than in the rainy bunds, when, from the humid state of the atmosphere, and the leaf of the mulberry-plant being so much saturated with moisture, the cocoon becomes flabby, and its fibre weak.

Commercolly.

Of this species of worm there are no less than five harvests produced at Commercolly. The

The Resident there observes, respecting it, as follows.

The Commercolly chassars formerly raised no cocoons except the dessee; but in the year 1790 two sorts of nistry cocoons were introduced by Mr. R. Becher, who was then the Commercial Resident. The dessee is by far the best of all the tribe of silk-worms, and produces the best sort of silk, both as to the staples and colour: indeed, the first A can only be made from the very best sort of cocoons of this description. In one year there are five crops of them: 1st. the October bund, 2nd. the November bund, 3rd. the March bund, 4th. the April bund, and 5th. the June and July bunds. The cocoons of the first are the best in the year. The November bund is more productive in worms than the October, merely because in the latter there is a more plentiful supply of mulberry-plant to feed them with, as it does not perfectly recover from the effects of the periodical rains in time for the worms of the October bund; but the silk from the October bund is preferable to that of the November bund, and the worms yield a larger produce.

In those seasons when we have occasionally showers of rain without hail (which ruins the mulberry-plant) the March bund is an excellent one, producing plenty of cocoons and good silk; but in those years when there is very hot weather without rain, and when the thunder-storms are accompanied

accompanied with heavy showers of hail, the cocoons are bad and very few. The April bund and the June and July bunds are not to be depended upon; they are sometimes productive, but generally very defective; the produce both bad and very small. The largest quantity of silk ever produced in any one year at this filature, amounted to 1,664 maunds.

Cossimbuzar.

The Resident at Cossimbuzar writes as follows:

The November bund in this aurung is the largest of the year, capable of producing in a favourable season from four to five lacs of rupees in cocoons.

In speaking of the dessee-worm of the March bund, the Resident observes, that the quality of the latter is about upon a par with that of the November bund, and that he calculates on a favourable season, that between the two sorts (annual and dessee) three lacs of rupees might be supplied from this bund.

With respect to their relative degrees of value, I am of opinion (the Resident observes) that the annual worm is as far superior to the dessee, as the latter is to the mixed breed of the dessee and China insect, the produce of the April and July bunds in this aurung.

In the April and July bunds at Cossimbuzar there appears an intermixture of the dessee cocoons with what is termed by the Resident the China

insect,

insect, of which the Board will speak hereafter more fully. The Resident observes, that during the April bund the China cocoons prevail exclusively, and pretty generally also in the July bund, though there is frequently a very considerable admixture of the dessee or country worm throughout the latter. He also states, that formerly, when he assumed charge of the factory, the descriptive mark of the China insect was the length and thinness of the cocoons; and of the dessee worm, its comparative bulk or thickness. But since the intermixture of the two genera, this distinction is scarcely perceptible; in so much, that the native rearers term them indifferently China or country cocoons, although the appellation of the China insect more exclusively belongs to the April bund.

The Resident estimates the produce of the April bund at one lac and a half of rupees of silk, and the July bund as capable of producing from three to four lacs of rupees, when the rains are moderate and the weather favourable.

In his letter of the 3d September 1817, the Resident further states:

It has been found by experiments long ago made, that the large worm,* the best in Bengal, will only produce silk annually. The next in rank is the small or dessee worm, which in this aurung may be procured nearly throughout the year; and the

* Neither will it generate with the dessee worm.

the third sort, or the China worm, prevails here only during the April bund. It is considered of the worst kind by the rearers, and in my belief is nearly exploded as a distinct species, being often blended with that of the dessee genus, though it does predominate in the April bund.

Hurripaul.

At Hurripaul, the Resident, speaking of the dessee cocoon, observes, that it cannot be called at present the production of his aurung, it having been introduced only last year, and the quantity received has been very small. Whether they will be raised in greater abundance, he cannot now say.

Jungypore.

The Resident at Jungypore states that this species of worm (dessee) is produced only in the November and March bunds. In a favourable harvest of the November bund, twelve thousand maunds might be procured. In a favourable harvest of the March bund, four thousand maunds might be procured. The March bund at this factory is, however, always doubtful and precarious, and there has not been what is considered a good March bund for the last thirteen years.

Malda.

At Malda, the dessee cocoon is the best species in every respect, and most plentiful beyond comparison,

parison, producing silk of the best thread and brightest colour. The season for it, however, is only (at least chiefly) during the cold weather and the spring, from November to April; but the bunds are more productive and less uncertain than those of the hot and rainy seasons. About four-fifths of the whole annual produce of the district is of the cocoon.

Radnagore.

The dessee cocoon does not appear to generate in the Radnagore district.

Soonamooky.

The dessee cocoons are produced in every bund in the Soonamooky district, and yield silk of a bright yellow colour. The eggs are hatched and formed into cocoons in from fifty-five to sixty days in the November and March bunds, from forty to forty-five days in the October, and from twenty-eight to thirty-two days in the April and June bunds. About three-fourths of the whole produce in the October, November, and March bunds, and one-fourth in the April and June bunds, are of this cocoon.

At Soonamooky the dessee cocoon yielded in the year 1813 (the year of the largest produce at this filature) 1,040 maunds of silk.

Bauleah.

Bauleah.

With exception to the annual worm, which has been observed upon in a preceding part of this minute, as the produce of the Bauleah district, the dessee assortment with the madrassie would appear to constitute the only remaining produce carried to the Bauleah filatures.

The best cocoons of the October bund are reserved for saunch or seed for the November bund, and the same with regard to the seed of November bund for the March bund. In the remaining bunds of the year (*viz.* April, June, July, and September), the Bauleah Resident observes, that the dessee cocoons are reared in small quantities, owing to the madrassie cocoons yielding better produce and the better quality of silk.

The district of Bauleah produces cocoons in so great abundance, that it is believed any quantity of silk can be procured from it; certainly a quantity far beyond the means of the Company's filatures to work off. In the year 1811, when hired native filatures were worked in aid of those of the Honourable Company, the quantity of silk supplied to the Honourable Company from the Bauleah district was 2,708 maunds, in part of which was provided from the March and November dessee cocoons, silk maunds 1,803..10. In the April, June, July, and September bunds, in which, the Resident observes, there is but a small quantity of the

the dessee cocoons reared, the provision was in silk maunds 576 .27.

The Resident further states, that the cocoons produced in Bauleah and the vicinity in the November bund, if a favourable one, are about 60,000 maunds.

The China Cocoon.

The worm next in estimation after those of the annual and dessee breeds, is the China worm. This is, as its name imports, the silk-worm of China introduced into Bengal.

This species of worm appears to have degenerated greatly in many parts of Bengal. It is, however, both the white and yellow sorts, found in abundance in the Radnagore district, and yields silk generally of very fair quality.

Cossimbuzar.

At Cossimbuzar, as has been before observed, there is a great intermixture of the dessee cocoons with the China. The latter predominates in the April bund, and the descriptive mark of it is the length and thinness of the cocoon. It is considered by the rearers of Cossimbuzar to be the most inferior kind; and the Resident observes, that it is nearly exploded as a distinct species, although it does predominate in the April bund.

Jungypore.

The produce of the China worm in the Jungypore district is estimated by the Resident, in a favourable season, at 3,500 maunds.

Hurripaul.

At Hurripaul the China cocoon is also abundant. It is produced, the Resident observes, in every bund of the year except the March bund, and continues coming on until February. Five-eighths of the produce consist of these cocoons.

The fibre of this cotton is finer and weaker than that of the March bund cocoons, and the silk, in every respect, inferior. The quality of this silk varies according to the bund.

Malda.

The produce of the China cocoons in the Malda district is so rare as not to be worthy of notice.

THE NISTRY TRIBE OF COCOONS,

In which may be comprehended the madrassie of some of the filatures.

Of the origin of this tribe of silk-worm, and the import of its denomination (*nistry*) the Board are not able to speak with the degree of precision it were to be wished. The tribe appears to be composed of three species, *viz.* madrassie, soonamooky, and

and cramee. They are peculiar to the Commercolly district, with exception to the assortment madrassie, which is also found in the districts of Bauleah, Soonamooky, and Malda.

Bauleah.

The April, June, July, and September bunds at Bauleah, as has been before observed, produce silk from the madrassie worm.

Commercolly.

The Resident at Commercolly observes, that of all the nistry tribe the Soonamooky is the best, and is one of those brought into the Commercolly aurungs by Mr. Becher. The silk made from these cocoons, when really good, is very little inferior to that made from the dessee, if you do not attempt to make the fine letters. Few are procurable in the bunds of October and November. They thrive best in the hot weather, and are plentiful in the March and April bunds; particularly so if the dessee has failed, as they are not above one-half of the time in coming to perfection that the dessee is, and are of a much more hardy nature, requiring little attention, and will eat such leaves as are rejected by the dessee.

The madrassie cocoons are inferior to the soonamooky, but next in rank to them, and is one of those brought into these aurungs by Mr. R. Becher. They produce a silk of a greenish hue, much inferior

rior to the dessee or soonamooky, but are much sought after by the private merchants, as they yield a large produce. They are only to be met with in the March and rainy bunds of April, and June-July. The worm, like the soonamooky, is very hardy, requiring little care, and not at all choice in its food.

The cramee cocoon, he believes, is inferior to all the others. It is not to be met with on the Commercolly side of the Ganges. He cannot speak of it with any certainty. He never admits it into the Company's investment.

Madrassie.

Malda.

The madrassie silk-worm is distinguished from the dessee by a black mark under the throat. It is preferable in produce, &c. during the hot weather and the rains, from May to October. Its great comparative defect is, that it cannot be kept in store (in these aurungs at least) longer than a few days without total destruction, whereas the dessee may be kept in well aired cocooneries even twelve months without material injury. The proportion of madrassie cocoons reared in the November and March bunds is extremely small, but a sufficient quantity nevertheless remains for seed, at the commencement of May, when the madrassie crop becomes preferable to the dessee, and continues so until

until October. About one-fifth of the whole annual produce of the district appears to be of the cocoon.

Soonamooky madrassie cocoons are produced in this district in each bund of the year. They have finer fibres than the dessee, and the silk from them is mellower to the feel. The worms are hardier, and bear the changes of the atmosphere better than the dessee worms. The colour of the silk from the madrassie is much paler than the other. In the April and July bunds about three-fourths of the produce, and in the March, October, and November bunds about one-fourth, are from the madrassie cocoons.

Tussah Cocoons.

The tussah silk-worms are reared in all the western forests from Ramghur to Midnapore, with some degree of variety as to the quality of the gootee.

There are three different kinds of tussah goottees (the cocoons being so denominated) collected in Assin or September, *viz.* the mooga, teerah, and bonbunda.

Mooga

Is the most common and plentiful; the thread coarse, but winds easily. The goottees are sold direct from the forests.

Modes of rearing the Goottees.

The seed is purchased from jungle people and others, who collect it in August. Plots in the forest are appropriated for rearing, where the ashan, saul, and sejah trees predominate, particularly the first, which constitutes the best food for the worm and is preferred by it. These spots are carefully cleared of other trees and shrubs annually. The same spots answering for several years, each man occupied in the business pays a yearly tax of eight annas to the jungle-farmer or zemindar.

In all Baudoon (Aug.-Sept.) the grub eats its way out of the goottee, and is immediately placed on the trees within the plots. Its impregnation by the male does not seem to be noticed by the rearers, but when eggs are produced on the leaves they are carefully folded into a kind of cup and gently rubbed with turmeric: in a few days the young worms appear and are removed to the trees on which they are to remain. The rearers live in huts erected on the plots, keeping guard with pellet-bows, to drive away kites, crows, and other birds, which otherwise would destroy the worms.

These

These feed on the leaves and increase in size daily: About the beginning of Assin (middle of September) they begin to spin, and by the end of that month the goottee is finished, when they are collected, and put into boiling water to kill the grub, which otherwise would eat its way out.

The rearers have advances from the pykars in money, rice, salt, cloth, and other commodities. After the collection the price is settled and the advances adjusted accordingly. The rearers are of no particular caste; but a superstition exists amongst them, that one of the party should keep *nee-aum* (a ceremony which enjoins daily ablutions and restrictions as to particular food, &c.) for the success of their operations.

Teerah.

A smaller goottee, said to be the male of the mooga. The thread represented as finer, but not so easily wound nor so much valued by the weavers.

Bonbunda.

The largest of the wild silk-worm. Being found in the forests in its natural state, and not stinted in its food, it attains a greater size than the mooga, and which appears the only difference between them; but it is scarce. The thread runs easily, and being coarser is more valued on that account by the weavers. The goottee found in its wild state

is

is much larger than any of the cultivated kinds. It is sometimes found in considerable quantities, but generally scarce, owing, no doubt, to the depredations made on the worms by the birds.

These three species, in fact one genus under different names and modes of rearing, are called the rainy-weather sorts; but there are others of the dry months, the Cartick, in October, denominated the dabba and buggoy.

Dabba

Gives a fine thread and good tussah. The rearers generally retain a sufficiency of seed. The chrysalis begins to cut its way through the pod (after the Roinse Caut, a period from the 8th to the 22d Assaur, end of June) and spin from the middle to the end of August.

Buggoy

Is of a light drab colour, gives a fine thread very soft, almost equal to cocoon silk; particularly those that are reared in Singbhoom. It approaches so near to the silk, that I am informed the silk piece-goods weavers frequently mix it with the real in the manufactories, in the proportion of one thread to three. Seed procured in Baudoon (Aug.-Sept.) begins spinning in the middle of November, and completes by the end of the month. This superior tussah is chiefly reared in Singbhoom.

Tarroy.

Tarroy.

Another inferior sort of tussah, gathered in December, is a small goottee difficult to wind; thread harsh; seed procured in October; spins from the 15th to the end of December. These are in less estimation than the other sorts.

The natives, in preparing this silk for use, first boil the cocoon in alkali till it shells off. The process is then continued until the thread appears to separate, when they run it into *ulluah* in a wet but not hot state, mixing oil and filth to add to the weight, by which they are paid for the work done. The *ulluah* is given to other spinners, who twist it into thread called *packwaun*, adding on their part, for the same reason, potatoe starch and more oil. The skeins are always tied up with some thick good-for-nothing *ulluah*, all of which is sold together by weight.

No. 1.

EXTRACT LETTER *from the Court of Directors to the Governor-general in Council, Bengal, dated the 19th February* 1833.

(F.)
Letter to Bengal, 19 Feb. 1833.

The number of bales with which we desire to be supplied is 7,000. The proportion thereof to be furnished from each filature, and the assortment of which the several indents are to consist, are specified in the following scale.

Scale of Provision of Filature Raw Silk for Investment, 1824.

	A.		B.		C.			
	No. 1, of from 4 to 5 Cocoons.	No. 2, of from 7 to 8 Cocoons.	No. 1, of from 10 to 12 Cocoons.	No. 2, of from 12 to 14 Cocoons.	No. 1, of from 16 to 18 Cocoons.	No. 2, of from 20 to 22 Cocoons.	No. 3, of from 24 to 30 Cocoons.	Total.
Commercolly..	200	300	250	150	50	150	—	1,100
Gonatea	300	100	200	200	50	50	—	900
Cossimbuzar..	—	—	150	200	200	200	50	800
Jungypore.....	100	150	100	50	100	150	—	650
Malda	—	50	100	50	150	100	100	550
Rungpore	50	50	50	50	100	150	50	500
Radnagore.....	150	200	100	—	100	100	50	700
Bauleah	50	200	100	50	150	200	50	800
Surdah........	50	50	50	50	100	150	—	450
Hurripaul	100	100	—	50	50	50	—	350
Santipore.....	—	—	100	50	50	—	—	200
	1,000	1,200	1,200	900	1,100	1,300	300	7,000

Bales of two maunds each.

						Tussah.	
Y	adnagore.	Rungpore.	Santipore.	Surdah.	Total.	Gonatea.	Grand Total.
	Bales.	Bales.	Bales.	Bales.	Bales.	Bales.	Bales.
18	316	40	—	—	1,742	—	2,129
18	—	67	—	—	748	—	762
18	204	123	—	—	2,140	20	2,466
18	268	56	—	—	1,578	10	1,709
18	193	268	—	—	3,317	34	3,715
18	537	319	—	—	4,951	8	5,499
18	532	243	—	—	4,124	48	4,806
18	172	307	—	—	3,082	32	3,471
18	409	165	—	—	2,182	15	2,530
18	344	253	—	—	2,334	—	2,501
18	412	475	—	—	4,864	—	5,027
18	477	407	—	—	3,449	—	[illegible],669
18	683	348	—	—	5,012	—	5,409
18	741	122	—	—	4,956	—	5,476
18	727	494	76	295	5,100	—	5,661
18	558	179	331	341	5,556	—	5,651
18	578	367	230	332	4,286	—	4,366
18	638	275	116	67	4,465	—	4,642
18	607	296	648	401	6,001	—	6,001
18	689	225	703	395	6,135	—	6,135
18	725	457	613	511	6,901	—	6,901
18	604	489	463	564	7,484	—	7,484
18	735	461	482	577	7,284	—	7,284
18	1,064	235	295	435	6,860	—	6,860
18	619	273	57	372	5,028	—	5,028
18	737	139	59	224	4,646	—	4,646
18	1,090	49	36	306	5,063	—	5,063

No. 1.

EXTRACT LETTER *from the Bengal Board of Trade to the Silk Residents*, 31*st March* 1813, *with reference to Paragraphs* 17, 18, 19 *of the Court of Director's Letter, dated the* 2*d June* 1812.

That mulberry plantations can be established on account of the Company, so as in time to render the public investment in a considerable degree independent of other sources of supply for cocoons, is not, we conceive, to be expected, considering that, for the accomplishment of such an end, lands to so great an extent must be cultivated, and servants so numerous must be employed, as well as buildings be erected for the rearing of cocoons, comprehending altogether such a field of care and superintendence, as no Resident could be competent to, in addition to the minute

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To improve the breed of the silk-worm throughout the districts where they are produced, and also to introduce a superior description of the plant used for their food, or at least to substitute a better

better mode of cultivating the Bengal mulberry-plant than that at present employed, are objects unquestionably much to be desired, with a view to procure a greater degree of firmness and consistence to the thread of the cocoon, on which the excellency of the silk depends. But we are of opinion, that the only mode of effecting these grand and distinguishing points, is in the way of *inducement* with the present cultivators of the mulberry-plant and present rearers of the silk-worm. In these respects, great exertion, assiduity, and perseverance on the part of the respective Residents, would, we are disposed to believe, be capable of effecting no small degree of improvement, notwithstanding there would evidently, from the well-known habits and prejudices of the natives, be no inconsiderable obstacles to be overcome. It might be desirable that an attempt should be made to introduce the China mulberry into general use, and to this end, that a small plantation should at first be made by two or three of the Residents contiguous to their factories, that from the cuttings to be supplied from the Botanic Garden, with a view to ascertain by experiment the property of this plant to nourish the silk-worm, compared with the plant of Bengal. The Residents might also be able to induce some of the cultivators to allow a little more space to the plants, and thus make trial of the improvement suggested by Dr. Roxburgh, whereby he conceives that the leaves, by having

having a more abundant supply of light and air administered to them, would be rendered better food.

With regard to an improvement in the breed of cocoons, the most effectual way, we conceive, would be by an interchange of communication between the several Residents, and by an endeavour to import from China the most esteemed breed of that country. Previously, however, to our giving any orders on the points above-mentioned, we desire to receive your sentiments respecting them, with reference to the 17th, 18th, and 19th paragraphs of the letter from the Honourable Court of Directors.

There is another circumstance to which we feel disposed to attribute the inferiority of the cocoons, namely, the worms being stinted in their food, from a well-grounded apprehension that the rearers, particularly when the bund is unfavourable and the supply of mulberry-leaves scanty, and consequently dear, give the worms no more food than is indispensably requisite and necessary for their support, and we cannot but think that, if the worms were better fed, the cocoons would be much superior to what they are at present, and that the staple of the silk would be considerably stronger.

No. 2.

LETTER *from Dr. Roxburgh, Superintendent of the Honourable Company's Botanical Garden, to the Bengal Board of Trade, dated the 23d November* 1812.

SIR:

I have received your letter of the 6th instant, together with an extract of the general letter from the Honourable Court of Directors, under date 15th May 1811; together with the copy of the minute of the Board of Trade of the 1st of October 1796, and beg you will inform the President and Members of the Board, that it would afford me much real satisfaction to be able to render even the smallest assistance in the important inquiry under their consideration; but, unfortunately, I have no practical knowledge of the management of silk-worms, nor do I think I can suggest any thing useful, that is not already better known to the Board than to me.

The observation in the minute, "improper food," this I think may be the sole cause of degeneracy, if such has really been the case; and I think it corresponds with the habits of the natives, who bestow as little labour on their husbandry as they possibly can; and without much care, constant attention, and labour, the Indian mulberry-plant, as

as well as that of China, soon becomes stunted, and though not absolutely diseased, yet unfit to yield leaves of the best quality. I would, therefore, recommend that much attention may be paid to the mulberry plantations, let the species or sort be what it may, for I well know that few trees degenerate so fast as the various species of this useful family.

Accompanying this I send you my ideas, on what I think the best mode of rearing the plant in general use for feeding silk-worms in Bengal, chiefly taken from the natives themselves, and only requires to be faithfully followed, to ensure a constant supply of wholesome food for the worms.

Another consideration of much real importance must be, attention to freshness of the leaves when given to the insects: for though our domestic quadrupeds draw the best of nourishment from dry food, yet I believe the caterpillar of the silk-moth will thrive best when fed with the freshest leaves, gathered at a proper age, so as to suit the digestive organs of the little animals through their various stages. All those matters are perfectly known to the people employed in the work; but I know, from long experience, that to avoid trouble the great body of the natives will forfeit many of their comforts.

I doubt if standard trees would yield so many or such good leaves, as in the cut state in which the natives keep their plantation. I rather think not

not, and believe no better method can be thought of than what is in general practice, if liberally conducted. A little more space to the plants is the only improvement I can suggest: a more abundant supply of light and air to the leaves would, I think, render them better food. However, this is only my own idea, and may not stand the test of experiment.

Like improving the various sorts of our domestic animals as well as vegetables, there cannot be a doubt, that the utmost attention should be paid to pick out and reserve the very best cocoons for breeding from, which *present advantage* to the breeders may induce them to pursue a different practice.

Meterological knowledge would operate but slowly in the improvements the Board have at heart; yet it is highly proper that this useful branch of philosophical research should be more cultivated over India than at present. Permit me, therefore, to suggest, that the medical gentlemen at the various stations might be encouraged to keep a register of the weather, which could at all times be applied to various useful purposes, even our own health.

I have no knowledge of the China mulberry being cultivated in any of these provinces for the silk-worm, which is rather surprising, as it is more luxuriant, and of quicker growth than the common sort, the leaves greatly larger, and every way more

substantial

substantial. At present there are but few trees in the Botanic Garden; but as it grows readily from cuttings, I will venture to assure the Board, that in a very short space of time hundreds of the plants, and their cuttings, will be ready for distribution, should they be wanted.

Observations on the Indian Mulberry-Tree (*Morus Indica.*—Linn. sp. pl. ed. Willd. vol. iv. p. 370.)

For the cultivation of this plant over Bengal for feeding silk-worms, a light rich elevated soil is made choice of; for the Hindoo cultivators say, clayey ground, or such as allows the water to settle about the roots of the bushes, will not do. The plantations, they say, require to be renewed once in three or four years, to insure a constant succession of the best leaves, cuttings are employed and planted about the close of the rains, in rows three feet asunder, and about half that distance in the rows.

A plantation once formed requires no great labour to keep it in order, as the close luxuriant growth of the plants keeps the weeds pretty well under. However, it is necessary to dress the ground now and then, and to earth up the plants while young or when the rain washes away the earth from their roots. The ground is generally so moist at all times of the year in Bengal, as to render

render irrigation almost unnecessary; an advantage the Coast of Coromandel cannot boast of, and will ever render it impossible for that country to cultivate silk at as low a rate as in Bengal.

The plant is usually cut four times in the year, and stripped of its leaves twice. The latter mode is practised during the rains, when cutting the plants would injure them, by the water penetrating the cut parts: besides, by leaving the branches at this season at their full length, there is less danger of their being overflowed during the inundation of the Ganges.

The ryots who cultivate the mulberry-bush do not always rear the worm. When they do not, they cut and sell the leaves upon the tender twigs to those who breed the animal but do not cultivate the plant, by the basket-full, in some parts called a *coopie*, and is said to weigh, on an average, about one hundred pounds avoirdupois: the average price about three coopies for the rupee. While the worms are very young, they not only strip the leaves from the twigs but cut them small: afterwards, when the worms are larger, the whole leaves upon the twigs are given, and they remove the sticks when the leaves are consumed. The annual value of the crop per begah (the third of an English acre), taking the general average of markets, and also the general average of lands in point of quality of the soil, may be about eight rupees: deduct for the rent of the land two

rupees,

rupees, leaves a profit of six to the ryot for his labour, &c.

ORDERED, That copies of the letter and enclosure from the Superintendent of the Botanical Garden of the 23d November 1812, together with extracts of the general letters from the Honourable the Court of Directors, under dates the 2d June and 16th September last, be transmitted to the several Residents providing raw-silk, with information that the observations and orders of the Board thereon will be transmitted to them hereafter.

No. 3.

EXTRACTS *from several Letters from the Court of Directors to the Governor-general in Council, Bengal.*

Extract Letter, dated 17*th May* 1826.

We have perused the correspondence of the Resident with the Board of Trade, having for its object the obtaining of their permission to institute an experiment in a new system * of cultivating the mulberry

* Neez, or domestic, in contradistinction to the common cultivation by the ryots.

mulberry and rearing silk-worms. We approve of the sanction which, after certain references, you saw fit to give to the proposal, restricting the expenditure in its prosecution to 25,000 sicca rupees; and cannot but regard the spirit of investigation and zeal for promoting the improvement of our raw-silk, manifested by the preliminary trials made by the Resident and by his consequent suggestions, as very creditable.

We doubt not that your Board of Trade have directed that the silk which may be reeled from the cocoons produced by this particular plan of cultivation shall be separately embaled and invoiced under proper distinctions, and we shall be glad to receive with them statements shewing in detail the cost of this produce. The like course, we desire, may be pursued with regard to any further quantity of silk which may be raised, through the continuance or further extension of the experiment of neez cultivation.

Extract Letter, dated 16th May 1827.

In our letter of the 17th May 1826, we have noticed with approbation an experiment in the cultivation of the mulberry and the rearing of silk-worms, which you had authorized the Commercial Resident to institute at Santipore, and as it appeared to us that such an undertaking would afford much useful practical information upon a very

very important subject, we have watched its progress with considerable attention, so far as the proceedings of your Board of Trade have enabled us to do; and we trust nothing will have occurred to prevent your Board of Trade from making the report which you instructed them to prepare at the close of the year 1826, upon the receipt of which we shall not fail to take the matter into our particular consideration.

Extract Letter, dated 14*th May* 1828.

Among the bales of Santipore silk in the last import, there are five described as produced from cocoons of neez cultivation, four of which are stated to have been of the April and one of the November bund. We have caused these silks to be compared with those spun from cocoons of the same bunds supplied in the usual way, but have been disappointed in finding that they are considered to possess scarcely any superiority, either as to colour or quality, over the general run of ordinary Santipore bales; and the price which they produced at our sale confirms this opinion.

On the arrival of a larger quantity of the neez silks when the experiment shall have been in a more advanced state, we hope to find very distinct characteristics of superiority over the silks made from the common cocoons. With reference to paragraph 54 of our letter of the 17th May 1826,

1826, and paragraph 37 of our letter of the 16th May 1827, also to paragraph 43 of your letter to us of the 21st March 1827, we have looked into the Board of Trade's proceedings for the report which you directed to be prepared on the experimental plan of neez cultivation, which Mr. Marjoribanks has been authorized to carry on until the close of the year 1826, but do not find that the report had been forwarded to Government up to the end of June 1827. We trust, however, that nothing will have occurred to prevent the Board from drawing up a report on this subject, which we consider to be well deserving of attention.

Extract Letter, dated 10th June 1829.

A few bales of silk of the neez cultivation were included in the late import, like those adverted to in paragraph 44 of our letter of May 1828: they exhibited no superiority of quality over bales of the same bund produced from cocoons obtained in the ordinary way. The quantity of this silk which we shall receive in the present year will probably be more considerable, and afford better means of judging of the advantage of this method of rearing cocoons, than have been obtained through the scanty produce from the neez cultivation hitherto consigned to us. We see it necessary, however, to notice, that we are still without that full and complete exposition of the details of this measure which

which we have formerly called for, and without which we shall remain unable to appreciate the merits of the undertaking.

Extract Letter, dated 16*th June* 1830.

Four bales only of silk of the neez cultivation have been received in 1829, two of which have been sold, but are not at all superior to the silks of the same bund spun from cocoons obtained in the usual manner.

We still remain uninformed of the progress of this experiment; but as the Board of Trade, in their letter to the Resident dated 22d May 1829, have required an early report thereupon, we may expect to be shortly in possession of the required communication.

Extract Letter, dated 20*th July* 1831.

The proposition of the Commercial Resident at Santipore for instituting an experimental neez, or as it is explained, domestic cultivation of mulberry, and of rearing silk-worms, is brought to our notice in paragraphs 32 to 37 of your letter of the 31st December 1824, from which we at first understood that the entire process of planting the mulberry, of rearing the silk-worms, and of winding off the silk, was to be conducted under the personal inspection and direction of the Commercial Resident and factory servants; that the ground was to be hired by the Resident, the necessary buildings erected,

erected, the proper instruments provided, and the workmen paid by him; the object being to insure that the silk-worms should have a full supply of food and be managed with the greatest care and attention, and thereby afford silk of a superior quality to that made from cocoons supplied by the pykars; and further, that the cost of this silk would be considerably less than the common rates of the factory.

This experiment, if successful at Santipore, might have led to improvement in the general production of silk, and we have attended with much interest to the notices respecting it recorded upon your Consultations, and have frequently adverted to it in our despatches.

As the supply of silk which we have received of this neez cultivation has been very small, compared with the amount of the monies which have been expended in its production, we feared that the experiment was not going on satisfactorily; and it is with much concern we learn, from your letter of the 28th September 1830, paragraphs 147 to 150, not only that it has entirely failed in producing a supply of silk, but that outstanding balances have been suffered to accumulate to a large extent. We trust, however, that in the explanation you have called for, the Resident will be able to show that the business may be brought to a close, without incurring so much loss as the last report of the Board of Trade gave us reason to apprehend.

(H.)

1. Extract Statement of the Agent of the Patentees of Heathcoate's Reel to the Bengal Board of Trade.

2. Letter from the Bengal Board of Trade to Government, dated the 1st May 1827, recommending a trial of the Patent Reel.

3 Letter from the Bengal Government to Board of Trade, dated the 10th May 1827, sanctioning the proposal.

4. Letter from the Bengal Board of Trade to Government, dated the 22d February 1828, reporting result.

5. Extracts Letters from the Court of Directors to the Governor-general in Council, dated the 10th June 1829 and 16th June 1830, referring to the quality of the patent Reel Silk.

No. 1.

Extract Statement *to the Bengal Board of Trade from Mr. John Wilkinson, Agent of the Patentees, in England, and Messrs. Heathcoate and Co.'s Silk-reel, transmitted through Messrs. Alexander and Co. of Calcutta.*

Mr. Heathcoate's method of reeling a silk of fifteen cocoons, is to divide into three sets of five cocoons each. The filaments from these sets are separately collected into three ends or strands, at guides placed at proper distances from each other: the three distinct ends then converge to a common eye or guide, and are united into one compact thread by the croisie. This croisie is formed by passing the thread round two small and light pullies, and then crossing the thread upon itself and attaching it to the reel. By these arrangements the eye of the fileur can readily distinguish between five cocoons, or four or six, so as to always throw on a fresh cocoon as the ends singly fail. This single croisie of the thread upon itself renders it unnecessary to have two skeins running upon the reel from the same basin. It also entirely prevents the "marriage:" a very prejudicial union of the two threads, which occurs so frequently on the common plan, when the croisie is formed by two threads crossed over each other. If, how-

ever,

ever, an expert fileur can attend to more than three sets of five cocoons each in the same basin, a second skein may be wound upon the reel, as the second thread would also pass round a similar but distinct set of pullies, and the croisie be made upon itself. In this manner the fileur would attend to thirty cocoons, in six sets of five each; and if one thread break, it is repaired without deranging the other, and without passing a double thread or "marriage" upon the reel.

The example thus stated of Mr. Heathcoate's method of reeling a fifteen cocoon silk with the following table, will show their applicability to all sizes of silk exceeding five cocoons.

6	cocoons are to be divided into	2 sets of	3	each.
8	.. ..	2 —	4	—
9	.. ..	3 —	3	—
12	.. ..	3 —	4	—
16	.. ..	4 —	4	—
20	.. ..	5 —	4	—

And so on to any desired number, never exceeding four cocoons in each set when the number exceeds two sets.

No. 2.

LETTER *from the Board of Trade to the Vice-President in Council, Bengal, dated the 1st May* 1827.

We have the honour to lay before your Excellency in Council, copy of a correspondence which has passed between our Board and Messrs. Alexander and Co., agents for Messrs. Heathcoate and Co. in England, patentees of a new reel invented by them for the more perfect winding of filature raw-silk.

The terms originally demanded by Messrs. Alexander and Co. on the part of the patentees, for liberty to use the new reel at the Company's filatures in Bengal, generally, during the space of two years, were so extravagant as to be rejected by us, although (as we informed those gentlemen) the adoption of any new mode of winding filature silk, by which its quality could be considerably improved, and its selling price raised in England, is an object extremely to be desired in times like these, when the value of the article has experienced so great a depression in that market.*

Messrs. Alexander and Co. have now submitted an amended proposition to the following effect:—
"That fifty reels be prepared on the patent plan
"at

* The loss on the June sale of 1826 was £30,850.

"at each of two factories, and worked until as "many bales shall have been prepared at each, "*viz.* fifty bales. That the actual charge of pre- "paring the reels be borne by the Company (it is "supposed that the expense will not exceed two "rupees per reel). That at one of the filatures "the confidential agent be allowed to direct the "reeling process, and that the other be conducted "under the direction of the Government Com- "mercial Resident; and as Mr. Becher of "Rungpore has given the subject attention, he be "directed to undertake it. That at the conclu- "sion of the experimental manufacture, the patent "reels shall be removed and delivered up to us, "as agents for the patentee; and that the Resi- "dents be directed by Government to withhold "entirely from adopting its principle until the "will of the Court be ascertained. That a "remuneration of three annas per seer, or fifteen "rupees per bale, be allowed."

From the description given by the confidential agent of the patentee, of the superior qualities of evenness and solidity of thread, and freedom from breaks, possessed by silk wound on the patent reel, it is said to sell for two shillings per pound in advance on silk wound on the common reel. The muster skein wound here on the patent reel transmitted by Messrs. Alexander and Co., on being referred to the Sub-Export Warehouse-keeper for report, has, although wound under

many

many disadvantages, received much commendation; and as it is stated that the patent reel is used in winding silk in France, Austria (including the Lombards), Venetian Territories, and in the other states of Italy, from whence Great Britain receives her supplies of filature-wound silk, we think it very desirable that the Honourable the Court of Directors should possess a sample of their Bengal silk wound in the same manner, and as the experiment is capable of being conducted at so inconsiderable an expense.

We, therefore, beg leave to recommend, that the proposition of Messrs. Alexander and Co. be accepted, and that the experiment be immediately commenced upon during the present March bund. Fifty bales of silk to be wound at Rungpore, under the superintendence of Mr. C. Becher, the Commercial Resident; and fifty bales at Radnagore, where the machinery is more perfect, and the Resident more experienced than at Santipore. The expense of altering the reels to be borne by the Company, and the agents of the patentee to receive a remuneration of three annas per seer. The silk after being wound to be packed and invoiced separately, and consigned to the Honourable the Court of Directors, by the first direct ships of the ensuing season.

No. 3.

LETTER *from the Bengal Government to the Board of Trade; dated the* 10*th May* 1827.

I am directed to acknowledge the receipt of your letter of 1st instant, with its enclosures, and to state that, under the circumstances represented therein, and in conformity to your recommendation, the Right Honourable the Vice-President in Council is pleased to sanction the adoption, experimentally, of the plan of winding filature raw-silk by means of the new patent reel, invented by Messrs. Heathcoate and Co., on the terms proposed by their agents, Messrs. Alexander and Co., and in the manner suggested by your Board in the last paragraph of your letter.

2. You are accordingly requested to take the necessary measures for giving effect to the foregoing resolution, communicating the result in due time for the information of Government and the *Honourable the Court of Directors.*

No. 4.

LETTER *from the Board of Trade to the Right Honourable Governor-general in Council, dated 22d February* 1828.

With reference to our address of the 1st of May last, and to the Chief Secretary's letter in reply of the 10th of the same month, relative to the trial of the experiment of winding silk by means of the new patent reel invented by Messrs. Heathcoate and Co., we beg leave to submit to your Lordship in Council the enclosed copy of a letter, under this date, from Messrs. Alexander and Co., reporting that Mr. Wilkinson, the confidential agent of the patentee, is desirous of returning to England.

2. It will be in the recollection of your Lordship in Council, that Mr. Wilkinson was deputed to Radnagore to superintend the working of the patent reels at that residency; but the March bund, which produces the best silk at that residency, having been worked off before Mr. Wilkinson arrived there, he was transferred to Santipore. The quantity to be reeled was one hundred bales; namely, fifty at Rungpore, and fifty at Santipore. The Resident at Rungpore reported, under date the 10th ultimo, that fourteen bales of the patent silk had been despatched to the presidency, and that seventy maunds remained to complete the quantity

quantity ordered. At Santipore only twenty-two maunds have been manufactured; but as the Cuttaines, who have been instructed by Mr. Wilkinson, will have no difficulty in completing the remainder of the order, and as the Resident at Rungpore has fully informed himself of the principle and application of the patent, we are not aware that there is any objection to Mr. Wilkinson's being permitted to quit India.

No. 4.

EXTRACT LETTERS *from the Court of Directors to the Governor-general in Council, dated the* 10*th June* 1829 *and* 16*th June* 1830.

Extract Letter dated 10*th June* 1829.

We received in the last season, by the ships *Warren Hastings* and *Zenobia*, thirty bales of silk, described as having been manufactured by means of the patent reel referred to in the Report of the Board of Trade to your Government, dated the 1st May 1827. Of these bales, fifteen were reeled at the Rungpore and fifteen at the Santipore factory.

Fourteen of the bales in question have been brought forward at our sales in February 1829, and we have no reason to believe, either from the opinion

opinion entertained of their quality or from the prices which they produced, that any improvement whatsoever has been imparted to the silk by the employment of the reels in question.

The bales of the patent reeled silk reserved in our warehouses for future sale, resemble in all respects those already disposed of, and we doubt not will be regarded in the same light by the trade.

Seventy bales remain to be received in the present year to complete the number of one hundred, to which, by the agreement of the Board of Trade with the agents of the patentee, the experiment was to be extended.

We consider it therefore inexpedient, upon the present occasion, to direct that any further engagement be entered into for the employment of the reels in question at any of our filatures, but shall take the subject into our further consideration after we shall have received the larger parcel still due.

Extract Letter dated 16*th June* 1830.

Amongst the bales of Rungpore silk imported in 1829, we find only one that had been wound by Heathcoate's patent reel, but five bales of the same description have been received from the Santipore factory. In all these, as in the parcels referred to in paragraphs 46 and 47 of our letter of 10th June 1829, we do not find any superiority over other silks

No. 1.

EXTRACT CIRCULAR LETTER *from the Bengal Board of Trade to all Silk Residents, dated the 4th March* 1831.

Par. 2. You are enjoined to make it known to the Pykars by proclamation, that silk is only required on the terms specified, and that higher prices will not be submitted to, unless it be on account of the higher letters, A No. 1 and A No. 2; they will thus see their own interest in procuring cocoons calculated to yield the best description of silk.

No. 2.

EXTRACT MINUTE *of the Bengal Board of Trade, dated the 4th March* 1831.

Par. 18. The Board resolve not to sanction a higher price per seer of sicca-weight 72. 11. 7. for silk of this year, the produce of the Marsh bund, than sicca rupees 8. 8., November ditto 8. 4, March bund, small cocoons, and April bund, 7. 0, rainy bund, 6. 12, and these prices are to be the general limit at all the factories for silk.

19. With a view, however, to encourage the increased manufacture of the best description of silk of letter A, which is wound off from the largest

largest and finest cocoons of the most favourable bunds (*viz.* March and November) at a loss to the Pykars, the Board resolve to allow at all the factories manufacturing silk of this letter a compensation, over and above the general price fixed, of

12 annas per seer on letter				A, No. 1
6	..	..	—	A, No. 2

No. 3.

EXTRACT MINUTE *of the Bengal Board of Trade, dated the 7th June* 1831.

The progressive increase on the prices paid for cocoons since 1815-16 until within the two past years, may partly be explained by the increased demand for silk as the principal article of the Company's investment before the supply was fully equal to the demand; but this does not satisfactorily account for the high prices so long maintained, when it is considered that the cultivation of the mulberry, and means of rearing the worms, may be carried to almost any extent, and still pay more to the persons engaged in these pursuits than they could derive from any other source or occupation.

That the supply is now as adequate to the demand as it was when both the supply and demand were less, and the price considerably lower, there is

is no doubt. The cost of labour, too; has not increased, though that of fuel, so extensively used in the manufacture of silk, has certainly somewhat risen.

Our attention, then, should be directed to the means of bringing down the prices to their former standard, bearing in mind, that they must be such as would remunerate the mulberry cultivator, rearer of cocoons, and all who are necessarily employed in the manufacture of the silk. This will lead us to investigate narrowly into every item of expense which the investment is now made to bear, on account of the delivery of the cocoons at the factories until the final despatch of their produce in silk to the presidency.

We regret that the result of our inquiries does not afford sufficient data, on which to calculate with precision the comparative net profit arising from the cultivation of the mulberry over that of other products of the soil; but we are assured that it is considerably greater, and yields on an average little less than twenty rupees per begah, which would bear a great reduction, and still hold out sufficient encouragement to the cultivator.

The expense of rearing cocoons, including the cost of the mulberry-leaves, varies in the different bunds; and the following is a pretty accurate statement of the actual cost in each bund of cocoons sufficient to produce one seer of silk, at which rates the mulberry cultivator and chassar or rearer (supposing them to be procured direct

from

(K.)

1. Extract Letter from the Court of Directors to the Governor in Council, Bombay, 7th January 1831, regarding specimens of Bombay silk consigned to London in 1828.

2. Letter from the Secretary to the Bengal Government to the Board of Trade, 9th October 1832, with Copies of Letters from Bombay Government and a packet of silk-worms' eggs.

3. Letters from the Bengal Board of Trade, 15th October 1832, to Secretary to the Agricultural and Horticultural Society and Residents at Bauleah, Soonamooky, Hurripaul, and Commercolly, respecting rearing of silk-worms from the said eggs, and proposed transmission of mulberry cuttings from Bombay.

4. Letter from the Secretary to the Agricultural and Horticultural Society, dated 18th October 1832, in reply.

5. Minute of the Bengal Board of Trade and Letter to the Bengal Government, 22d October 1832, recommending application to be made to Bombay Government for an extensive supply of the Indian mulberry cuttings and a further portion of the eggs.

6. Extract Letter from Resident at Soonamooky to the Board of Trade, 27th October 1832, on the nature of the mulberry plants and process of cultivation in Bengal, for the information of the Superintendent of Botanic Garden at Daporee.

7. Letter from the Bengal Government to the Board of Trade, 22d January 1833, with a further supply of silk-worms' eggs from Bombay, and enclosures regarding the same.

8. Minute

the superiority of the produce of the latter over that from the St. Helena Italian silk-worm.

18. Minute of the Bengal Board of Trade, dated 24th July 1834; with Letter to the Resident at Soonamooky, and Reply of the latter, dated 29th July 1834, with reference to the above request.

No. 1.

EXTRACT LETTER *from the Court of Directors to the Governor in Council, Bombay, dated the 7th January* 1831.

We take this opportunity of acquainting you, that the brig *Spring*, on which you consigned to us a small quantity of raw-silk, and a few specimens of prepared twisted and dyed silk received from Mr. Baber, the principal Collector in Dharwar, was unfortunately stranded, and although the silk was saved from the wreck, it was found on its delivery into our warehouses, in January 1828, to be greatly damaged by sea water, and in fact altogether unmerchantable. We deemed it, however, right to exhibit the silk for inspection to the merchants and dealers, and to dispose of it at our sale which took place in October last, of which inspection and sale the following is the result.

The prepared silk was considered by the brokers to be of the quality of sewing silk, but foul and inferior. The eight skeins, weighing three pounds net, produced five shillings and a penny per pound.

The raw-silk was declared to be of a middling white colour and of a firm thread, rather more resembling Turkey silk than any other kind, generally foul and uneven, but well reeled. The hundred

hundred skeins, weighing twenty-seven pounds net, produced seven shillings per pound.

Had the parcel been in a sound state, it is probable that the prepared and dyed silk (but upon which there is a duty of five shillings and twopence per pound, if cleared for home use) would have produced about ten shillings per pound, and the raw silk about twelve shillings per pound.

No. 2.

Letter *from the Secretary to the Bengal Government to the Board of Trade, dated the* 9*th October* 1832, *with Enclosures.*

I am directed to transmit to you the accompanying copy of a letter from the Chief Secretary at Bombay, dated the 15th ultimo, and of its enclosure, together with a packet containing silk-worms' eggs, and to desire that the Board will have the worms from these eggs carefully reared and the produce kept separate, in order that it may be ascertained if they are of a superior quality to those used ordinarily at this residency.

To the Secretary to the Supreme Government.

Sir:

I am directed by the Right Honourable the Governor to transmit to you the enclosed copy of a letter from the Superintendent of the Botanic Garden at this place, together with the packet of silk-worms' eggs therein alluded to.

I have the honour to be, &c.,

(Signed) C. Norris,

Chief Secretary with the Right Honourable the Governor.

Dapooree, 15th September 1832.

To the Secretary to Government, Territorial Department, Bombay.

Sir,

Agreeably to the instructions of the Honourable Court of Directors conveyed to this Government and communicated to me, I have the honour to forward a supply of eggs of the Italian silk-worm bred at St. Helena, for transmission to Bengal.

These eggs are from the purer breed of two sorts. The other having been crossed with the Bengal worm at St. Helena, and being very inferior to the present, I take it for granted it will be unnecessary to forward any of that kind.

A portion of the eggs of this packet are marked as

as haviag been produced here by worms fed upon the Italian white mulberry.

I beg to observe, that the two varieties of the Italian white mulberry received from St. Helena with the eggs are now established here, one variety being named the "doppia foglia;" and that I shall be ready, at the requisition of Government, to transmit cuttings or young plants of them in boxes, to Bengal or elsewhere. It should be noted, that these eggs are found to hatch at very irregular periods, so that some may come forth prematurely in the packet; but as the greater portion will probably not be all hatched for four or five months, it is presumed that the quantity now sent to Bengal will be sufficient to establish the breed.

I have the honour to be, &c.,

(Signed) CHARLES LUSH,

Superintendent Honourable Company's Botanic Garden, Daporee.

Daporee, 15th September 1832.

No. 3.

LETTERS *from the Bengal Board of Trade, dated the 15th October 1832, to the Secretary to the Agricultural and Horticultural Society.*

ORDERED, That the following letter be written to the Secretary to the Agricultural and Horticultural Society.

To C. H. Robinson, Esq.

SIR:

I have been instructed by the Board of Trade to forward to you the annexed copy of a letter received from the Superintendent of the Honorable Company's Botanic Garden at Dapooree, and to request that you will be good enough to ascertain from the Committee of the Horticultural Society, whether it would be acceptable to them to receive a portion of the silk-worms' eggs referred to by Mr. Lush, with a view to endeavour to rear them at the Society's farm at Akra.

I am further desired to inquire, whether it would be considered desirable to require the transmission to this presidency of cuttings of the varieties of the Italian white mulberry plant alluded to in the fourth

fourth paragraph of the letter from the Superintendent of the Honourable Company's Botanic Garden at Dapooree.

Letters to the Residents at Bauleah, Soonamooky, Hurripaul, and Commercolly, respectively.

With reference to the annexed copy of a communication from the Secretary of Government in the General Department, dated the 9th instant, I am directed by the Board of Trade to intimate to you, that a portion of the silk-worms eggs therein referred to is forwarded to you herewith, for the purpose of having the worms from these eggs carefully reared under your more immediate superintendence. You will be good enough to furnish a special report upon the produce of these eggs, which should be kept separately, in order that it may be ascertained whether they are superior to the species in ordinary use in the aurungs under this presidency

No. 4.

LETTER *from the Secretary to the Agricultural and Horticultural Society to the Board of Trade, dated the* 18*th October* 1832.

To F. Macnaghten, Esq., Secretary to the Board of Trade.

SIR:

I have had the honour to receive your letter of the 15th current with its enclosure, offering to the Committee of the Agricultural and Horticultural Society appointed for the superintendence of the experimental farm at Akra, a portion of the silk-worm's eggs lately received from Mr. Lush, Superintendent of the Honourable Company's Botanic Garden at Dapooree, together with some cuttings of the Italian white mulberry plant.

In reply, I beg you will inform the Board that the Akra Committee will, with pleasure, now receive such portion of the eggs as can be spared; and they request that you will intimate their wish to have cuttings of the white mulberry, so soon as they can be sent round from Bombay

No. 5.

MINUTE *of the Board of Trade, 22d October* 1832, *and Letter to the Bengal Government.*

The Secretary having reported that he has supplied the Secretary to the Agricultural and Horticultural Society with a portion of the silk-worms' eggs applied for in the above letter:

Agreed, We address the Vice-President in Council as follows.

To the Honourable Sir C. T. Metcalfe, Bart., Vice-President in Council, Fort William.

HONOURABLE SIR:

We have the honour to acknowledge the receipt of Mr. Secretary Prinsep's communication of the 9th instant, and in reply, beg leave to state, for the information of your Honourable Board, that we have distributed with suitable instructions the silk-worms' eggs received from the Superintendent of the Botanic Garden at Dapooree, amongst the four Commercial Residents of Bauleah, Soonamooky, Hurripaul, and Commercolly.

We have likewise provided the Committee of the Horticultural and Agricultural Society superintending the experimental farm at Akra with a supply of these eggs; and as they have expressed a wish to be furnished with the cuttings of the Italian

Italian white mulberry plant, referred to in the fourth paragraph of the letter from the Superintendent of the Botanic Garden at Dapooree, we beg leave respectfully to recommend that a reference be made to the Bombay Government accordingly. The plant will doubtless be very acceptable at several of the Commercial Residencies also, and we would therefore suggest that an extensive supply of the cuttings be solicited, together with any further portion of the eggs that can be conveniently spared.

No. 6.

EXTRACT LETTER *from the Resident at Soonamooky to the Board of Trade, dated the 27th October* 1832.

I had not heard of the new importation at Bombay of the "doppia foglia," or as it would seem, the *double*-leaf Italian white mulberry tree, which Mr. Lush, the Superintendent of the Botanic Garden at Bombay, states had been received from St. Helena, with the moth eggs of the purer breed of two sorts of the Italian silk-worm; and as these together may possibly prove a great acquisition, I regret that a few of the cuttings of the "doppia foglia" had not been sent with the eggs. With the view, therefore, of obtaining the earliest supply

supply practicable, I beg leave to suggest, that there would be no difficulty in sending on different days, by the letter dâuk mail, a few small parcels of cuttings, of six or eight inches in length, which would not exceed a pound weight. With such assistance, experiments might *immediately* be made here and elsewhere, while waiting for young plants purposed eventually to be sent by sea.

As it may possibly be useful to Mr. Lush to be apprised of the nature of our mulberry-plants in Bengal, and the process of cultivation, I take the liberty of offering a few passing remarks, which I hope may not be considered intrusive, on a subject of so much interest.

REMARKS.

The Indian mulberry-plant is not allowed to rise above a foot and a-half or two feet. It is cut twice a day, as required, to feed the worms. The plant is thus exhausted in about the third year, and is then rooted out; but is easily renewed by cuttings and planted in rows, with just room enough between to admit of the cultivator weeding, dressing, and earthing up the roots.

The *dessy* or *kajlah* leaf pinnated,

There are two species of mulberry-plant in the aurungs of the Soonamooky residency, west of the Bhaugrutty river, as shewn in the margin. One is the *dessy* (indigenous), called "kajlah;" the other *ba-dessy* (exotic): *See Fig.* 2. both bear fruit, which begins to set towards the end of October and ripens in about two months.

The *satee* is supposed to be the *madrassie* or foreign: its bark is of a pale grey colour; that of the "kajlah" is

Fig. 1.

Natural size.

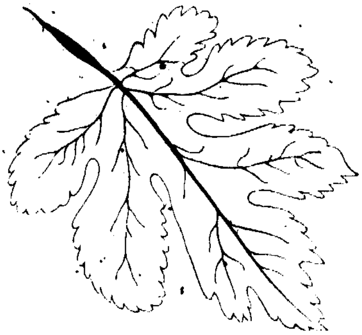
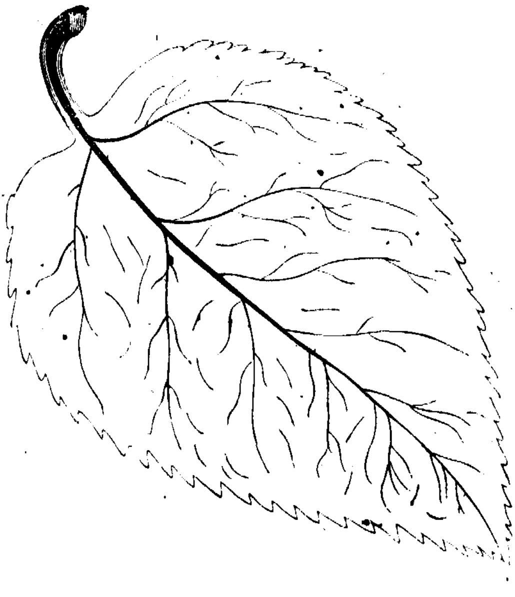


Fig. 2.

The *ba-dessy* or *satee*, leaf serrated and pointed at the ends.

Natural size.



pinnated, small component leaves, serrated on the edges, and pointed at the ends. *See Fig.* 1.

Probably the China mulberry plant, originally imported *viâ* Madras, hence its name. The leaves are much larger, and considered by naturalists more substantial, luxuriant, and of quicker growth than the dessy; and yet the latter greatly prevails in cultivation. The leaves are closely set and more abundant, in the proportion of two and a-half to one. Moreover, as being the most tender, it is eagerly desired by the worm, which thrives in proportion. It is sold by the weight or load, from eight annas to one and two rupees or more in adverse seasons, and is very profitable.

is darker. I cannot speak to the culture of plants and usage at other silk aurungs, having never been at any of them.

With reference to the culture of the dessy-plant it is to be observed, that the ground is generally so moist at all times of the year in Bengal, as to render irrigation almost unnecessary. The plant is usually cut four times in the year and stripped of its leaves twice.* The latter mode is practised during the rains, when cutting the plants would tend to injure them, by the water penetrating the cut part, or eventually by the overflowing of the Ganges.

But this apparent local fertility is unfortunately combined with great humidity, and sudden transitions of temperature from heat to raw cold, and cold to heat, which are the great evils the manufacturer of our silk has to contend

[illegible] ...ger to the six periodical bunds of generating the silk-worm to the completion of the pod or cocoon. Whereas in Italy there are only two cocoon seasons (Raccolta's harvests), supposed the annual and the next in succession, which produces the finest silks (organzine); but the second is always inferior to the first: so also in Bengal.

contend with in Bengal, opposed to the superior advantages possessed by the Itàlians, of a pure, mild, and regular temperature; especially on the borders of a mountainous country, such as the northern provinces of Italy, Piedmont, Milanese, and the Tyrol approaching the Alps.

No. 7.

Letter *from the Bengal Government to the Board of Trade, dated the* 22*d January* 1833, *with Enclosures.*

With reference to your letter of the 22d October last, I am directed to transmit, for your information, the accompanying copy of a letter from the Secretary to Government at Bombay dated the 4th instant, together with a small parcel, stated to contain a further supply of the Italian sulphur silk-worms' eggs, forwarded by the Superintendent of the Botanic Garden at Daporee, and a copy of that officer's letter, stating that the chief difficulty in rearing these worms arises from their hatching at very irregular periods, and recommending that the

the present batch be all kept in one place until the next generation comes forth.

To H. T. Prinsep, Esq., Secretary to the Supreme Government, Fort William.

SIR:

I am directed by the Right Honourable the Governor in Council to acknowledge the receipt of Mr. Officiating Deputy Secretary Batten's letter of the 30th October last, with enclosure, and to acquaint you, for the information of the Honourable the Vice-President in Council, that the silk-worms' eggs and mulberry cuttings therein requested will be forwarded to Calcutta as speedily as possible.

I have the honour to be, &c.,
(Signed) L. R. REID,
Secretary to Government.

Bombay Castle,
4th January 1833.

To the Secretary to Government, Territorial Department, Calcutta.

SIR:

Agreeably to the instructions of the Right Honourable the Governor in Council at Bombay of

of the 3d ultimo, I have the honour to forward a further supply of the eggs of the Italian sulphur silk-worm, originally from St. Helena.

2. Not having a supply ready at Dapooree, in consequence of the sickly state of the worms hatched in October last, I have despatched a quantity which had been sent to the Southern Mahratha country, where, from the drought and unseasonable weather, I find all the country worms are dying, as well as the few already hatched from these papers.

3. The chief difficulty in rearing these worms arises from their hatching at very irregular periods. From this circumstance, it is necessary to have a large portion together, in order that enough of the same age may be reared to breed together; I therefore take the liberty of recommending, that the present batch be all kept in one place until the next generation comes forth.

I have the honour to be, &c.,
(Signed) CHARLES LUSH, M.D.,
Superintendent of the Honourable Company's
Botanic Garden near Poona.

Camp at Darwar,
Southern Mahratha Country,
4th January 1833.

No. 8.

Minute *of the Bengal Board of Trade, 22d January 1833, with Letters to the Horticultural Society and Commercial Residents.*

Ordered, That the following letters be written.

To the Secretary to the Horticultural aud Agricultural Society.

With reference to your letter of the 18th October last, I have been directed by the Board of Trade to forward to you herewith, for the purpose of being presented to the Horticultural and Agricultural Society, a further portion of silk-worms' eggs received from Bombay.

2. The desire of the Society to be supplied with cuttings of the Italian white mulberry-plant was duly communicated to the Bombay Government, and the same shall promptly be forwarded to you as soon as they may arrive.

To the Residents at Bauleah, Soonamooky, Hurripaul, and Commercolly.

With reference to my letter of the 15th October last, I have been directed by the Board of Trade to

to transmit to you herewith a further portion of silk-worms' eggs received from Bombay, and to desire that these also, in like manner, be carefully and separately reared, and be fully and specially reported upon by you.

No. 9.

LETTER *from the Bengal Government to the Board of Trade, dated the 15th March 1833, with Enclosures.*

I am directed by the Right Honourable the Governor in Council to transmit to you the accompanying copy of a letter from the Secretary to Government at Bombay, bearing date the 14th ultimo, and of a letter from the Superintendent of the Botanic Garden at Dapooree, respecting the different species of the mulberry-tree, and other points connected with its cultivation, and to desire that the Board will communicate with the Secretary to the Agricultural and Horticultural Society on the subject of this reference, and furnish the information required by the Bombay Government as early as may be convenient.

The

The specimens mentioned in Dr. Lush's letter are enclosed.

To H. T. Prinsep, Esq., Secretary to the Supreme Government at Fort William.

SIR:

I am instructed to transmit, to be laid before the Honourable the Vice-President in Council, copy of a letter received from the Superintendent of the Botanic Garden at Dapooree, dated the 31st ultimo, requiring some information respecting the different species of the mulberry-tree, and with reference to the two queries contained in paragraph 5, to communicate the request of the Right Honourable the Governor in Council, that the information solicited by Dr. Lush may be furnished by this Government.

I have the honour to be, &c.,

(Signed) L. R. REID,

Secretary to Government Territorial Department Revenue.

Bombay Castle,
14th February, 1833.

To L. R. Reid, Esq., Secretary to Government, Bombay.

SIR :

I have the honour to inform you, that I have despatched from Dharwar a further quantity of St. Helena silk-worms' eggs, to the address of the Secretary to the Bengal Government, Territorial Department.

2. I have found that the most of the country worms in and about Dharwar were cut off by disease within the last two months, and that the portion of the Italian worms already hatched from the St. Helena eggs had shared the same fate; I therefore took the liberty of sending off the remainder to Bengal, as the only chance of saving them.

3. With reference to your letter of the 13th ultimo, enclosing the copy of a communication from the Commercial Resident at Soonamooky, I have to report, that I have commenced supplying cuttings of the white mulberry by the letter post, as desired, and that I shall constinue to do so until I receive information from Mr. Shakespear that a sufficient quantity has been sent.

4. I have to express my thanks to Mr. Shake. spear for his remarks on the cultivation of the mulberry in Bengal. The two varieties which I have sent for introduction to Bengal, are distinct from

from those of which Mr. Shakespear was so kind as to forward specimens.

The "*dessy*," or indigenous mulberry, is cultivated about Poona and in the southern Mahratta country. The *ba-dessy* I take to be the same as a third variety I received from St. Helena, with entire-pointed leaves and a whitish bark.

Admitting the *morus alba* and *morus indica* to be originally specially distinct, I should say that the dessy and ba-dessy are varieties of *morus indica*, and that the larger white mulberry (entire leaves), and the *doppia foglia* are varieties of *morus alba*. However, the several kinds of mulberry used for feeding worms have been so modified by cultivation, as to render the distinguishing marks between a species and a mere variety extremely difficult to ascertain. In order to prepare the way for more correct information on the subject, I herewith forward specimens of several kinds of mulberry, with an outline of the arrangement of the genus *morus*, which I beg to request may be sent to Bengal for comment or correction.

5. There are two important points yet to be established with regard to the several kinds of mulberry.

1st. What kinds do the worm prefer?

2d. What kinds will grow best as standard trees, and what are the best adapted for the field-cultivation on the Bengal plan?

6. It is with a view to decide the above question,

tion, that I wish to continue the subject brought forward by Mr. Shakespear. I was before aware of the system of cultivation pursued in Bengal, so far as it is published in a work considered as authority, "on the husbandry and commerce of Bengal;" but as there are some crude notions abroad in this presidency on the subject of mulberry cultivation, a decision of these questions, from competent authority and experience, may prevent much waste of time and capital.

Bengal Cultivation as described by Mr. Shakespear.	*Experimental Cultivation in Western India.*
7 The Indian mulberry-plant is not allowed to rise above a foot and a-half or two feet. It is cut twice a day, as required, to feed the worms The plant is thus exhausted in about the third year, and is then rooted out; but is easily renewed by cuttings, and planted in rows, with just room enough between to admit of the cultivators weeding, dressing, and earthing up the roots.	The mode introduced at Darwar and Poona, about ten years since, differs but little from that described opposite. The mulberry cuttings are allowed to grow about three or four feet high, and as they are always irrigated, they produce leaves at this height. They are not rooted out under seven years. I am myself convinced, that the more frequently this kind of mulberry is cut down the better, and more tender leaves are produced, and that old trees become straggling and produce inferior leaves: but my experience only amounting to four years, during which

which time I have cultivated the plant at Dapooree, my authority may be thought insufficient; I therefore beg to submit the proposed Deccan plan for an opinion from Bengal.

Plantations of Mulberries, dessy and perhaps also the ba-dessy, are now forming about Poona and Ahmednuggur upon the Italian plan. The cuttings having struck, are transplanted and set from eight to twelve feet apart, and trained up as standard trees, the leaves of which it is proposed not to gather for four years.

8. The following information is desired from Bengal.

1st. Has such a plan ever been tried in the Bengal provinces; and if it has, with what success?

2d. Will the leaves be improved, or otherwise, as food for the worms in this climate, by being produced from old trees?

3d. Provided the trees and the leaves be improved by age, and produce a larger crop as they grow older, still will it be possible, with

with any supposable rate of profit, to compensate for the capital of a silk farm lying dead for four years, and in a country where labour is dearer than in Bengal and irrigation necessary ?

I have to remark, with regard to the two varieties of white mulberry before mentioned, that they are of much slower growth than the common kind, and will probably make good standard trees. They do not so readily root from cuttings. I have found budding them on the common mulberry the most eligible way of propagating them, as a single bud inserted into a stock serves the purpose of five or six buds sacrificed for a cutting, besides gaining a year's growth by the age of the stock. This is, of course, only a temporary expedient, to facilitate the quicker introduction of the plant into the country.

I have the honour to be, &c.
(Signed) Charles Lush,
Superintendent Botanic Gardens,
Dapooree.

Dapooree, Poona,
31st January 1833.

(ENCLOSURE.)

GENUS MORUS.

Species that have been cultivated or proposed to be cultivated for feeding silk-worms.

A 1. Fruit roundish.

1. *Morus nigra.* The common officinal black mulberry (not in India ?), used in some parts of France and Italy for feeding worms. The only species common in England.

A 2. Fruit cylindrical.

2. *Morus latifolia.* A fruit very long, leaves *rough*, variously divided. A large tree common in gardens in the Deccan. The worms do not flourish on it.

B. Fruit short.

3. *Morus Indica.* Leaves *smooth*, entire or divided, heart-shaped, *equal* at the base. Fruit purple. Stem shrubby and diffuse.

Var. Dessy.

2. Ba-dessy. Is this *Morus Tartarica* of some botanists ?

4. *Morus Alba.* Leaves *smooth*, entire or divided, heart-shaped, *unequal* at the base. Fruit whitish or *variously coloured*, pink or purple. Stem arborescent. Varieties common. Simple-leaved white mulberry.

2. *Doppia foglia.*

The above varieties differ in the form of the leaves. There appear to be others depending on the colour of the fruit.

The cause of the confusion that exists in the nomenclature of species and varieties of this genus, may be traced to the circumstance of botanists having taken their characters, almost exclusively, from the leaves. Now it happens that, in those species which have not been cultivated for fruit or leaves (as the *Morus Mauritiana*, *M. Scandens*,* and perhaps in the *M. latifolia*) the character of the leaf is sufficiently marked to determine the species, while in those kinds of mulberry on which silk-worms are fed an almost endless variety of leaf may be found. This being the case, it becomes of importance that characters should be taken from the fruit, stem, stipula, or parts of the plant. To do this properly, every known variety must be procured for comparison; a task which can scarcely be completed satisfactorily by any individual in India.

* Both these are growing in the botanical garden, Calcutta, and at Dapooree.

No. 10.

MINUTE *of the Bengal Board of Trade, 21st March 1833, and Letters to the Superintendent of the Company's Botanical Garden, to the Agricultural and Horticultural Society, and to several Commercial Residents.*

To N. Wallich, Esq., Superintendent of the Honourable Company's Botanic Garden.

I am directed by the Board of Trade to transmit to you the annexed copy of a letter, and of its enclosure, from the Secretary to the Bombay Government, under date the 14th ultimo, together with the specimens of mulberry-leaves which accompanied it.

2. The Board will feel greatly obliged by your favouring them with any observations on the subject of the cultivation of the mulberry-plant in Bengal which it may occur to you to offer, and the communication of which would be likely to prove interesting and useful to Dr. Lush.

3. You will further oblige the Board, by the early return of the specimens of the mulberry-leaves, herewith forwarded, they being the only set which has yet been furnished, and as they will very probably be required for inspection by the other

other parties, who have likewise been consulted on the subject of the present reference to you.

To C. K. Robison, Esq., Secretary to the Agricultural and Horticultural Society.

I am directed by the Board of Trade to transmit to you the annexed copy of a letter, and of its enclosure, from the Secretary to the Government of Bombay, under date the 14th ultimo, respecting the different species of the mulberry tree, and other points connected with its cultivation, and to beg that you will lay the same before the Committee, with a request that they will kindly reply to the several queries therein propounded, and also to report their sentiments, generally, on the subject of Dr. Lush's communication.

2. I have to express the regret of the Board at their inability to furnish the Horticultural and Agricultural Society, at present, with a portion of the specimens of the mulberry-leaves referred to in Dr. Lush's address, as the same, forming but one complete set, have been forwarded to Dr. Wallich, the Superintendent of the Botanic Garden; but they may hereafter be transmitted to you, should the Society be particularly desirous of inspecting them.

I am, &c.

To the Commercial Residents of Bauleah, Hurripaul, Commercolly, and Soonamooky.

I am directed by the Board of Trade to transmit to you the annexed copy of a letter, and of its enclosure, from the Secretary of the Bombay Government, under date the 14th ultimo, respecting the different species of the mulberry tree, and other points connected with its cultivation, and to request that you will be good enough to afford such information as it may be in your power to offer, in reply to the queries therein propounded, and also that you will report your sentiments, generally, on the subject of Dr. Lush's communication.

2. I have to express the regret of the Board of their inability to furnish you, at present, with a portion of the specimens of the mulberry-leaves referred to in Dr. Lush's address, as the same, forming but one complete set, have been forwarded to Dr. Wallich, the Superintendent of the Botanic Garden; but they may hereafter be transmitted to you, should you be particularly desirous of inspecting them.

(To the Resident at Soonamooky the following paragraph was added.)

3. I am further instructed to enquire whether you have yet received any of the cuttings of the white mulberry from Daporee, and to beg that you will afford due intimation when you may have been furnished with a sufficient supply.

No. 11.

MINUTE *of the Bengal Board of Trade, 8th July* 1833, *and Letter to the Governor-general in Council, with Copies of Reports.*

AGREED, We address the Governor-general in Council, as follows:—

To the Right Honourable Lord William Cavendish Bentinck, G.C.B., *Governor-general in Council, Fort William.*

MY LORD:

We have the honour to acknowledge the receipt of Mr. Officiating Secretary Bushby's letter, under date the 15th March last, forwarding copy of a letter from the Secretary to Government at Bombay, and we now beg to lay before your Lordship in Council copy of our correspondence with the Superintendent of the Botanic Gardens, Dr. Wal-

 lich,

lich, the Secretary to the Horticultural and Agricultural Society, and the several Commercial Residents most likely to have it in their power to furnish the required information, with respect to the different species of the mulberry-tree cultivated in Bengal, and other points connected with it.

As the correspondence in question comprises the whole of the matters referred to us, we do not deem it necessary further to trouble your Lordship with any opinion of our own on the occasion.

Extract Letter from Dr. Wallich, the Superintendent of the Botanic Garden, dated the 12th April, 1833.

I am not acquainted with any plant of agricultural or commercial interest, of which the natural history is involved in greater doubt and obscurity than the mulberry. The cultivated species are scarcely to be distinguished from each other by the ordinary characters employed for that purpose in other plants; at least all attempts of this sort have proved abortive, and recourse is therefore had to marks derived from the size of the tree, place of growth, colour of the fruit, and the like, all of which are vague and unsatisfactory. In point of fact, the real species of mulberry are very few in number, and plants which have hitherto been considered as species are in all probability nothing

nothing but varieties, and those varieties internally changing, according to soil, climate, and mode of cultivation. It is chiefly aided by the labours of Dr. Roxburgh, in his valuable "Flora Indica," and of Dr. Hamilton, in his matchless statistical surveys, that I am able to offer the following sketch of the different Indian mulberries; without, however, pretending to fix these, as yet, by any specific character or description.

1. *Morus Indica* of Linnæus, the common *toot* of Bengal. This is a native of India, and undoubtedly a distinct species. There exist two varieties, which may perhaps be different species, but which it is best for practical purposes to consider as varieties only. One of the varieties is never allowed to grow large, but constantly cut down to a stinted twiggy shrub, in order to induce it to produce an abundant supply of tender shoots and leaves. Of all the plants that yield food for the silk-worm in India, this is by far the most important, on account of the extreme facility of its cultivation, and the productiveness, luxuriance, and juiciness of its leaves, which are the favourite food of the worm.

The climate of Bengal is, above all others, favourable for the cultivation of this shrub, owing probably to the comparative moisture both of its soil and atmosphere, conditions which are peculiarly favourable for its growth, and the absence of which is probably the leading cause of the in-

capacity of the peninsula to compete with our part of India in this branch of husbandry. A plantation of the *toot* will last several years, and may be renewed from cuttings with perfect ease; and this process must be performed every fourth or fifth year, if a full and sufficient crop of leaves is desired.

A moderate rich, light soil, not too much mixed with clay, sufficiently elevated to secure the plantation from flooding, either from rivers or rains, an occasional ploughing and weeding, and a slight manuring, constitute the chief points of attention which this sort of mulberry demands, and if the patient and industrious Indian cultivator could only be made to prefer this method to the miserable plan usually adopted, he would reap a far more secure and ample profit from his labours, than the scanty and precarious returns which he generally derives. There would be no such failures of the crops of leaves, nor would such a vast proportion of worms perish annually for want of food, as frequently happens to the planters and breeders.

The other variety is a tree of considerable size bearing white fruits, whereas the preceding sort has them purple. It is called *morus alba* by Linnæus, and is perhaps a distinct species. It is cultivated, though in a trifling degree, as food for the worms.

2. *Morus atropurpurea* of Dr. Roxburgh, introduced from China into this garden, and now to be found

found in most private gardens. It is a native of that country, as well as Cochin China, and is employed there as food for the silk-worm. Dr. Roxburgh informs us, that it has not been found to answer that purpose in Bengal. It forms a smallish tree with long straggling branches, dark foliage, and deep purple large fruit.

3. *Morus leptostachya*, so called by me, on account of its long and very slender fruit, which is white and exceedingly sweet. This large tree is met with in most parts of the western provinces of Hindostan, where it is generally called *shah toot*. I am not aware that the leaves are much used for rearing the worm. It is, perhaps, the *morus latifolia* mentioned by Dr. Lush in his very able and interesting letter, and also contained among the dried specimens now returned; although I must confess my doubt as to its being Lamark's identical tree of Bourbon.

4. A very marked mulberry-tree with strongly serrated leaves, and therefore called by Dr. Roxburgh *morus serrata*. It was found by Major-general Hardwick on the alpine regions of north Hindostan, and the late Mr. Moorcroft sent plants of it from thence to this garden, where they thrive tolerably well. I am not aware that the leaves are used.

Extract

Extract Letter from J. M. De Verinne, Superintendent of Akra Farm.

The kind of mulberry which the silk-worms prefer has a small leaf of a dark colour, rather thick, called double-leaf, and difficult to pick. Its botanic name is *morus alba.*

The kinds that will give best as standard trees are called *morus alba*, of a white berry, and *morus rubia*, of a black berry, with upright large trunks dividing into large spreading heads, rising twenty feet high and more.

I think the common *dessy* (*morus indica*) is the best adapted for cultivation on the Bengal plan, as described by Mr. Shakespear, which is pretty nearly the same all over Bengal. In some places, however, they strip the leaves off the stems, instead of cutting both together.

Memorandum by Mr. W. Storm.

There are four kinds of mulberry used for feeding the silk-worm in the districts of Calcutta.

The native names are *saw*, *bhore*, *dessy*, and *china*. The two first produce fruit (black), but the last two have no fruit. The leaves of the *saw* are very large, but they are not given to the worm till they have passed two *goome*. The leaf of the *bhore* is small and jagged: the leaf of the *dessy* is small and plain; and the *china* is also small,

small, but jagged at the stem. The leaves are considered all equally good for feeding the worm.

The mulberry-tree is not cut down for five years; it is then allowed to grow for five years more, when it is rooted out.

Extract Letter from C. C. Hyde, Esq. Resident at Bauleah, 30th June 1833.

In the Bauleah aurungs the mulberry cultivation is entirely accomplished from cuttings of five or six inches in length, and in the course of five or six months after plantation, they become sufficiently rooted in the ground to admit of the shrub being cut as food for the worm. The cuttings are set three or four together, with six inches space between each cluster, and in rows, leaving sufficient width between the rows to admit of the ground being turned up by the khodalee and the small plough used in Bengal.

The mulberry-fields are never irrigated; but if the weather be favourable with a seasonable supply of rain, five or six crops may be obtained throughout the year, but never fewer than four, unless the season should be unusually droughty. If the mulberry-fields be originally planted in good land, well attended and kept well weeded, the plant will last ten or fifteen years: in that case, it is necessary to supply fresh earth annually as manure, after

after the first two or three years. The time, however, which one set of cuttings will produce the leaf with nutrition, depends much on the quality of the soil and the attention paid to render it fertile. Some fields will not last more than four or five years. The plant or shrub is used when it has obtained its proper growth according to the season, and whilst the leaf is fresh and nutritious. The height to which it grows before it is cut varies, as the weather may be favourable or otherwise: it may be stated from two to four feet. The plant, when required, is cut three or four inches from the ground; excepting the rainy season, when the stumps are allowed to be eight or ten inches in length.

After the plant has been used for the worm in July, it is allowed to grow to waste, in order that the rains or inundations may not destroy or injure it. The rains having subsided, the plant is cut down, the land ploughed and dressed, as may be requisite for the grand bund of the year, called the November bund. But the worm (composed of the dessy description) does not come to maturity before the end of December and the beginning of January.

The next bund, which is called the March bund, rears both the annual and dessy cocoons, as may be taken up by the villagers. The annual worm on the Bauleah side of the Ganges has not been so extensively matured as on the island of Cossimbuzar.

buzar, the Radnagore, and Hurripaul aurungs: indeed it is only three or four years since this description of worm has been cultivated by the ryots of the Bauleah aurungs.

At the time called by the natives *Sree punchomy*, about the end of January, the annual worms begin to disentangle themselves from the shell, and in a few days thereafter, if the egg does not hatch, the worm of the subsequent date seldom thrives or comes to maturity with advantage.

The two following bunds, called the "April" and the "June-July" bund, are generally composed of the nistry or madrassee worm, which is better able to withstand the rainy and sultry weather experienced as the sun approaches and leaves.

In the Bauleah aurungs not a worm is reared from the leaf of the tree. But the large or annual cocoon worm prefers the leaf of the shrub which is well matured, to that which is young and tender: hence it is inferable, that the annual worm would thrive better with the tree leaf than the shrub leaf. The tree, although never used in this district, is said to be cultivated in parts of the Rungpore and Radnagore districts for the production of cocoons.

The mulberry-shrub, notwithstanding it occasions more labour and expense, is more profitable than the tree, from its yielding four or five crops in the year, and thereby is more suited to the dessy and nistry worm. Whether these descriptions of worms

worms would thrive on the leaves produced from the tree I am unable to say.

Not being sufficiently acquainted with botany, I am quite unable to afford any correct information as to the description of plants grown in these aurungs, but probably both the white and red kind are used. I beg to forward herewith two descriptions of the leaf from plants cultivated in these districts; but the natives have no names to distinguish them, if they should belong to different classes. I beg also to forward eighteen fresh mulberry cuttings. They are somewhat longer than they should be for planting; but this has been allowed purposely, to admit of an inch at each end being cut off before they are put into the ground, to induce vegetation.

It is perhaps worthy of remark, that mulberry plantations are not cultivated out of the province of Bengal. The cause from which this happens is said to be, that neither the soil nor climate is congenial to the growth of the plant. The land of Bengal, indeed, is only partially adapted to its culture, and spots of ground are selected accordingly.

Extract Letter from R. Richardson, Esq., Resident at Commercolly, 20th June 1833.

The kind of mulberry used in these aurungs for rearing silk-worms is called *dessy toot*, and by dawk-banghy I have sent you some specimens of the leaves, for transmission to Dr. Wallich, Superintendent of the Honourable Company's Botanical Gardens.

The season for planting mulberry is the month of Kartick (October), although I have planted it with success all the year round. The cuttings are about five inches long, and are planted in rows about seven inches apart. In my opinion, it would be better a little further apart, and in a diamond shape, so that viewing the mulberry in every direction, it always appears in a line, leaving passages in every way for the free admission of air.

The leaves of the first cuttings of new planted mulberries are reckoned poisonous, and if given to the worms, kill them. After this the plant will be fit for cutting about every two months. After each cutting the field should be weeded and dressed with a little manure, and in the month of Kartick (October) every year the mulberry should be cut and the field undergo eight or ten ploughings and be well manured. Cultivated in this way it will flourish for seven or eight years. After this period the ground should have a fallow, or be appropriated

to

to other less exhausting crops for two years, when it may be planted with mulberry again.

Mulberry I planted last year round my house was cut this year on the 10th March, height two feet six inches and three feet; and again cut on the 10th May, height three feet and three feet six inches; and it is now two feet and two feet six inches high.

On the 30th April 1832 I sowed some mulberry-seed, which came up on the 20th May, and was one foot six inches high and fit for cutting by the 25th August. The leaves of this mulberry are preferred by the rearers of cocoons.

The mulberry is never permitted to grow into trees in this part of the country; though I have tried it, and it will grow into a tree upwards of ten or twelve feet high; but the wood is liable to be attacked with worms, and the tree soon decays. I should consider this mode of cultivating mulberry very expensive and ruinous to the chassars.

When the silk-worm is first hatched, it feeds on young mulberry-leaves, and as it grows stronger, leaves of an older growth are given it to feed on.

Extract Letter from J. W. Grant, Esq., Resident at Hurripaul, 5th April 1833.

There are two varieties of the mulberry here: one of which, the dessy, is generally cultivated for feeding

feeding silk-worms; the other, called simply by the natives the large mulberry, bears a purple fruit and is cultivated in gardens.

Although the large mulberry yields more leaves, the dessy is preferred, as agreeing best with the silk-worms. It appears that those fed with the garden mulberry yield an inferior cocoon.

I send specimens of the leaves for inspection. The dessy, I believe, gives a white berry, but is not allowed to produce fruit.

The method of cultivation differs from that in use about Bauleah and Malda, the leaves only being here gathered from standard.

Slips are planted in October, and leaves are *gathered from the plants in the following June.* Between three and four years from the first gathering of the leaves the plants are cut down close to the ground. This is done in February, and leaves are again plucked from the new sprouts in the following June.

In good soil the trees last upwards of fifteen years, and in bad not less than six or seven; but whatever may be the time a tree lasts, it is a rule to cut it down close to the ground every three years, so as to keep the standard of a height which enables a man to pluck the leaves without climbing.

The earth is dug up and the trees manured in October, and at this time they are also watered. Fresh earth is put around them in February,

and

and they are watered two or three times more during the year, according to circumstances. Whenever grass appears, the earth is dug up to destroy it.

The reason given by the natives for preferring the *standard trees* to cultivating in the same way as at Bauleah, is that the soil is too dry down here to answer in any other way than with the standard.

Mr. Lane ascertained that the Gonatea cocoons yield a stronger silk than the Hurripaul: I am unable to say if this is owing to climate or to the superior quality of the mulberry. Mr. Shakespear states, that the plant is dug up and thrown away about the third year. This is not the case about Bauleah: so far as I recollect, it is not quite exhausted there under nineteen or twenty years.

Extract Letter from C. Shakespear, Esq., Resident at Soonamooky, 2d April 1833.

I have the honour to acknowledge the receipt of your letter of the 21st ultimo,* together with

* Replying to queries on the culture of the mulberry tree and rearing of the silk-worm, submitted by Dr. Lush to the Bombay Government.

with its enclosures from the Secretary to the Bombay Government of the 14th February, transmitting copy of a letter of the 31st January to his address from Dr. Lush, Superintendent of the Honourable Company's Botanic Gardens at Poona, communicating queries upon which I am desired to give my opinion, and to afford other information on the subject of the cultivation of the mulberry-plant as well as rearing of the silk-worm.

Adverting to my address to you of the 27th October last, the subject of which I was glad to find proved acceptable to Dr. Lush, I should earlier have submitted the subjoined letters, which have passed direct between myself and that gentleman,* had I not wished to render the correspondence more complete, when enabled to do so by the receipt of Dr. Lush's rejoinder, but for which there has not yet been time, and your letter now under reply does not admit of further delay.

The Board will perceive that Dr. Lush having favoured me with cuttings and specimens of the several genus of mulberry leaves growing at Poona, I need not avail myself of their expressed obliging intention of eventually sending a part of those

* Dr. Lush to Mr Shakespear, 29th and 30th January; Mr. Shakespear in reply, 25th February.

those which are better disposed of in Dr. Wallich's hands, but I should be glad to be favoured with a memorandum of the success of the eggs sent to Calcutta.

I regret to say, that all the cuttings kindly sent to me by Dr. Lush have failed, after above a month's trial and every possible care, owing to the great distance travelled in slight paper packages,* and the intense heat of the weather, which destroyed the germ; but it will only operate as a temporary disappointment, after a better mode of keeping up the moisture and vegetation is adopted in the way I have taken the liberty to suggest to Dr. Lush. Meanwhile I have the pleasure to state, that of the three papers of the Italian eggs sent to me, a considerable proportion have successfully hatched, and the silk-worms have spun white cocoons,† such as I have described to Dr. Lush, namely: "Not so large as the Bengal annual, and with a tinge of green, owing perhaps to the change of plant on which they were fed; yet the small specimens of silk obtained, as far as I can judge, evince tenacity of fibre and softness approaching to the silk of our annuals, which

* Three of which have reached me.

† This is the more fortunate, as Dr. Lush now states that all those reared at Poona and its vicinity had died. But unluckily he does not specify if they had been fed on the leaves of the *doppia foglia* imported with them from St. Helena.

which bears the closest affinity to the best Italian silk. Hence there is reason to expect that the *doppia foglia* may prove a more grateful food to the worm of Italy now rearing than the indigenous plant of India, or *dessy kajlah*, this eventually tending to improve its cocoon and our cultivation."

The opinion may be erroneous; but I do not, for my own part, attach any bad effect to the discoloration specified, which indeed happens occasionally to the cocoons of these aurungs. Primitive beauty of colour is certainly very attractive, but it is presently obscured when the silk passes into the hands of the dyer and throwster, to be converted or twisted into organzine. It is then that the chief test of tenacity of fibre and firmness of texture, yet softness, are anxiously looked for; and these qualities are admitted by the operatives here to promise well in the new silk.

Adverting to the outline of Dr. Lush's arrangement of the genus *morus* (or mulberry-tree of Botanists), as well as to the two important points yet to be established, on which he invites comment—"with regard to the several kinds of mulberry and the endless variety of leaves found on those on which silk-worms are fed," it is well known that the worm which feeds on the white (*morus alba*) spins his cocoon of a finer fibre and better quality, than when other kinds are substituted. It is moreover an observed fact, that the

 tenacity

tenacity of the fibre does not solely depend on the saccharine and resinous, or solid nutritive matter on which the worm is fed, but it is influenced, and that very sensibly, by the temperature in which it is reared, yet not accelerated by any artificial process.

Dr. Lush observes, that botanists appear to have taken their character almost exclusively from the leaf; we cannot therefore wonder, that confusion exists in the nomenclature of species and varieties.

If by endless variety it is meant, that the same plant bears different shaped leaves, the accompanying specimens, taken from the standard (*sattee*) and the cut plant (or *kajlah*), curiously demonstrate this hypothesis; for on examining the lateral offsets, it will be seen that they bear leaves of different forms, seemingly interchanging one with the other.* Linnæus gives seven distinct species of the mulberry.

1st Query by Dr. Lush.—"What kind of mulberry do the worms prefer?"

Answer. Decidedly the indigenous (dessy or *kajlah*) cut plant, the leaves being closely set and more abundant, in the proportion of two and a half to one, as explained in the sixth paragraph of my letter of the 27th October 1832, and remark annexed

* None of the natives here seemed aware of this peculiarity until pointed out to them.

annexed thereto. It is the *morus alba*, or white mulberry, not allowed to fruit.

2d. "What kinds will grow best as standard trees, and what are the best adapted for cultivation on the Bengal plan?"

Answer. Worms fed on the standard (*sátee ba dásee*) or foreign, do not thrive; it is therefore only cultivated for fruit and that sparingly. It arrives at maturity or fruit-bearing in about three years. It is the *morus rubra*, or red mulberry, approaching to black, *morus nigra*. A poor fruit about an inch long, cylindrical, bears twice in the year, about October and March.

Remark. The cut plant flourishes in the lowlands about Ranjamattee, where the soil is sandy, which keeps the roots cool; and irrigation is not so necessary, or indeed used here, as it quickly loses itself in the sand: but in the high tenacious loamy soil, where water will pass over the surface quickly, irrigation is had recourse to, and a more abundant crop is produced, consequently encouraged by the planter to his own profit. But too much watery matter, though eaten voraciously by the insect, is hurtful, from its comparative want of nourishment or solid nutritive matter, as already observed. The nature of the plant itself being sufficiently succulent without artificial means, a rich soil is by no means so proper as that with an admixture of sand above specified.

Dr. Lush further desires information from Bengal on the following points:

1st. "Has the Italian plan now following at Poona, of setting cuttings from the standard eight to twelve feet apart, to be trained up as standard trees, the leaves of which it is proposed not to gather for four years, been tried in Bengal, and if it has, with what success?"

Answer. Not in the aurungs of the Soonamooky residency, which includes *Gonatea*, the general name of all silk manufactured therein. I cannot speak of others, though I have never heard that such practice obtains elsewhere.

2d. "Will the leaves be improved, or otherwise, as food for the worms in this climate, by being produced from old trees?"

Answer. The established practice, already fully explained, seems to prove the contrary.

3d. "Provided the trees and leaves be improved by age, and produce a larger crop as they grow older, still will it be possible, with any supposable rate of profit, to compensate for the capital of a silk farm lying dead for four years, and in a country where labour is dearer than in Bengal, and irrigation necessary?"

Answer. With reference to the first and second queries (10th paragraph of this), I think I may safely add, that certain disappointment and loss of capital would attend such speculations, contrary

to

to the existing nature of things in these aurungs. But Dr. Wallich may give a different opinion, as applicable to other soils and districts.

I have the pleasure to state, that besides having obtained a few small specimens of silk from the newly imported worms hatched here, I have secured a considerable quantity of eggs, supposed to be annuals, wherewith to propagate the breed during the next periodical season of hatching them, by which period it may reasonably be expected that plants of the *doppia foglia* may be in readiness to feed them. The experiment on this side of India in these aurungs will then be complete, and general dissemination follow. But perhaps it may be anticipated in Calcutta.

The practices and prejudices of the Hindoo breeder of the silk-worm in these districts may not be uninteresting. They pretend to hold the insect in a degree of religious awe, and thus, as sacred, impose on themselves penances for its salvation, handed down from one generation to another through time immemorial, which are strictly abided by in the progress of feeding the worm; more especially during the critical periods of the four ages, or sicknesses while moulting, during which the worm has reached two-thirds of its full growth, and until it ultimately closes itself in its pod. The intercourse of the sexes is forbidden. Girls (adults) and women, whether in their courses or parturient, are excluded. Men do not shave or perform their

ablutions or oil their bodies, but remain clad in their dirty clothes. Fish, turmeric, garlic, onions, snuff, and tobacco, are prohibited, though they smoke outside their houses.* Surely the proscribed have the best of it! To crown the whole conjuration, as a charm against evil spirits, an old shoe with a bundle of thorns is hung upon the cheek (lattice-screen) at the door of the breeding-house.

No. 12.

LETTER *from the Resident at Soonamooky to the Secretary to the Board of Trade, with enclosure.*

SIR:

With reference to my address of the 2d instant, I request you will be so good as to lay before the Board of Trade the annexed copy of a letter of the 21st ultimo from Dr. Lush, Superintendent of the Botanic Garden at Poona, which has now reached me, accompanied by a small tin case of mulberry-cuttings, and the leaves therein specified. I have only at present to add; that these specimens appear in

* In Italy and France the breeders are particular in keeping their hands and clothes free from the taint of tobacco, snuff, garlic, onions, and oils, as being all dangerous poisons to the worm, precautions which the wily Hindoo perverts to mysterious prohibitions, and the exclusion of others not initiated in the sanctity of his rites.

in a much fresher state than those heretofore sent to me, and that consequently, I hope to be more successful in rearing the cuttings.

To C. Shakespear, Esq., Commercial Resident, Soonamooky.

SIR:

I regret that the *doppia foglia* mulberries are not at present in a fit state to cut again, but in a few weeks I will continue the supply of cuttings.

I send herewith cuttings of an entire leaved variety of the *morus indica*, received with the other two kinds from St. Helena. As this is the kind I had supposed you have in Bengal, under the name of *madrassee*, I shall be obliged for farther information, on comparison between the leaves herewith sent and the plants when growing. A case of the cuttings of the larger variety of *morus alba* shall follow this immediately.

I am not sure that you will recognize much distinction in the dried leaves, but the plants when growing are of a very different habit. The one I term the large Italian white has more substance in the leaves, which retain moisture much longer, and on that account alone, perhaps, may afford a better food for the worms.

We have nothing under our presidency deserving the name of a silk filature. The worm was first introduced into the southern Mahratta Dooal from Mysore, by Mr. Baber, principal Collector, about the

the year 1823; first at the Dharwar jail, and thence among a few Mussulmen about Dharwar, Horblee, and other towns in the province. These persons had leases of seven years and advances of cash, and are cultivating one or two acres or so each of mulberries,* producing a few maunds of silk merely for local consumption, which are sold in the bazaar at Horblee at from three and a half to four rupees the seer of eight ounces avoirdupois. Some silk was made at the Poona jail from worms sent from Dharwar during two or three years; but on Signor Matti, an Italian, offering to produce silk at Poona in the year 1830, a grant of land was given to him, and the Government experiment given up.

Subsequently to this, Mr. Graham, civil surgeon at Ahmednuggur, obtained a grant of four hundred beegahs of garden-ground for mulberry planting. This gentleman has been compelled to return to Europe on sick certificate, and I believe his farm has not produced any silk. Signor Matti made a few specimens of silk the first year, but has produced none since, as he conceives that it will require two years more before his mulberry-trees are sufficiently large to enable them to bear stripping off their leaves. I do not understand how such an experiment is likely to lead to any pecuniary advantage.

Excepting then the few maunds of silk made in the

* Dassee variety.

the southern Mahratta country, we have as yet made no progress in the production of this staple.

I may mention, that the reel used at Dharwar is the same as that you described, but Signor Matti has introduced the endless strap for the movement of the layer. Mr. Graham purposed introducing the Chinese method of reeling, as figured in the frontispiece of Dr. Lardner's treatise on the silk manufacture.—(*Cab. Cyclo.*)

You will readily perceive from the state of our knowledge, or rather our ignorance on the subject of silk, that any calculations or details of expenses and profits derived from one or two-acre farms, would convey no very definite ideas of the capability of this side of India to enter into a profitable cultivation of this staple. I am sorry to add, that my worms are not at present in a healthy state; but I trust to be able to save sufficient to continue my supplies of eggs after the termination of the hot winds, also specimens of the cocoons.

No. 13.

LETTER *from the Acting Resident at Bauleah to the Bengal Board of Trade, dated the* 15*th April* 1833.

GENTLEMEN:

I have to state for the information of your Board, that the two tin cases containing a portion

of

of the eggs of silk-worms received from Bombay, which accompanied your Secretary's address of the 15th October 1832 and 28th January 1833, duly came to hand by the dawk, and I now beg to report the result of their rearing, and of that portion which has come to maturity.

2. The eggs said to be the produce of the Italian worm, reared at St. Helena, seem to correspond with the eggs of the annual worm of these aurungs, but from some unknown cause (probably from the egg having been laid at different periods) they have hatched at intervals. On some days a few worms made their appearance, and on other days many. With the exception of a few which previously extricated themselves, the period at which the eggs began to hatch was about the end of January last, from which time to the beginning of March, more or less daily disentangled themselves from the shell. This continued process of hatching has been attended much to the detriment of the worm, as well as with inconvenience and with greater expense, for so many stages of maturity being together, required additional labour and different cutting up of the leaf, as necessary for each stage. Those which were latest in hatching have had to encounter warmer weather and the greater prevalence of the southerly wind (which is prejudicially felt by the annual worm), also other unseasonable events for the description of worm.

3. From

3. From a month to five weeks is the period which the reared produce of the Bombay worm has been coming to maturity. But although worms sufficient to produce a maund of cocoons of forty cahons were hatched, I have only been able to mature one cahon and six puns of cocoons fit for winding off into silk. These, however, were of a very indifferent description; and not having been fit for letter A, have been spun into B 1. The silk thereof, consisting of five skeins, is herewith forwarded, and partakes of inferiority originating from the cocoons.

4. I also beg to forward a small quantity of the half-spun cocoon, the produce of the worms which, after reaching maturity, were unable, from sickness or other cause, to complete the process of the cocoon or pod, having died whilst in the act of spinning it. Other worms, again, have died without being able to accomplish so much as the forwarded specimen exhibits; and others, again, before they commenced spinning, although unable to feed longer on the leaf; while vast numbers before arriving near maturity have perished, as if unable to withstand the intense heat of the weather.

5. The very unfavourable state of the March bund cocoon season, owing to the excessive drought which has been experienced, has been greatly against the trial for which the Bombay eggs were forwarded; but there is nothing, from what has been seen, to induce the belief, that they are in any

any way better than the annual worm of this country, or that, under any circumstances, their produce would have realized better in quantity or quality.

6. For the information of the gentlemen who forwarded the eggs now reported upon, it may be proper to add, that the worm in question was fed from the mulberry shrub or plant cultivated in the Bauleah aurungs, and not from the leaf of a tree, as done in Italy and some other places.

7. A statement of the expenses in rearing the worm in question is herewith forwarded, and the amount thereof, Sicca Rupees 62. 12. 2, I have to request permission to debit "Account-current, Calcutta," in order that its adjustment may be effected by transfer to the Bombay Government.

No. 14.

LETTERS *from the Resident at Soonamooky to the Bengal Board of Trade, dated 26th August* 1833, *with Enclosures.*

GENTLEMEN:

In continuation of the subject of my address of the 2d of April, which replies to the queries submitted by Dr. Lush, under date the 31st January, to the Bombay Government, I beg to submit copy of the correspondence which since that period has passed

passed between Dr. Lush and myself, on the question at issue respecting the introduction into Bengal of the Italian mulberry-plants and silk-worms, from eggs sent originally from St. Helena, *viâ* Bombay, to Poonah, and from thence to me. The eggs were received here in November last from your Board, and cuttings of the plants from Dr. Lush by the letter-mail, on the 12th April, reported to your Board on that date.

2. I have before stated my success in rearing of the eggs, and the quantity of the produce in cocoons and silk,* besides retaining a stock of eggs supposed to be annuals, wherewith eventually to propagate the breed in the next periodical season of the March bund; and with respect to the cuttings, I have the pleasure to add, that there are now growing in my garden some vigorous plants of four feet high, besides others forwarded by me to the Akrah farm of the Horticultural Society in Calcutta, which arrived safe on the 30th July, as certified by the Superintendent, Mr. De Verienne.† They are all of the *larger variety*

* See fourth and twelfth paragraphs of my letter 2d April, also my letter herewith of the 16th April, sixth paragraph, to Dr. Lush, which accompanied specimens of the produce in cocoons and silk, also of those of Bengal.

† It is worthy of remark, that these cuttings travelled, in a small tin canister, no less than thirteen hundred miles, during the hottest period of an intensely hot season; thus, perhaps, affording a useful example of what may be done in botanic research.

variety of the white mulberry (the *morus alba*,) hitherto, I believe, unknown in Bengal.

3. We have not been so lucky with the *doppia foglia*, or double-leaf; but as Dr. Lush has obligingly promised to continue supplying me with cuttings of a more mature description,* and differently packed from those which failed in the transit, there is every prospect of ultimate success, the plant being naturally hardy. Meanwhile Dr. Lush states, that "he has despatched by sea two boxes of the living plants consigned to the Secretary, Territorial Department, Calcutta, but does not know the date of the sailing of the vessel." Perhaps these have already reached their destination; if so, I should be very glad to receive, through the intervention of your Board, a small proportion of the *doppia foglia*, in order to their propagation *here* with the other variety.

4. Your Board will observe, Dr. Lush states that the "St. Helena breed has become so degenerate at Poonah, in spite of every care, that he does not expect to restore it; but that this is matter of little importance, as the specimens which I sent him of the Bengal annual and its silk are conclusive in favour of the latter." This opinion accords with my own;† but I shall probably be able to make

* From trees received by the *Hugh Lindsay* steamer from Europe.

† See fourth paragraph of my letter, 2d April 1833, to the Board.

make a further experiment when the worms put out of the stock in hand, a part of which may eventually be reared on the leaves of the young Italian plants now growing here.

5. Dr. Lush says, "he was looking out for the pottery ghye apparatus," which, though long since ready,* I have been deterred from forwarding; as apparently useless, under the existing unpromising state of the manufacture of silk at Poonah; now, indeed, confirmed by the doctor's remarks, that "nothing is doing, excepting under the *delusion* he formerly mentioned, of growing† large trees *only*; to the neglect of the ordinary Indian practice;" which I have also frequently shewn is not the most desired by the worm in these aurungs, and therefore not cultivated for their consumption.

P. S. I will not trouble your Board with copy of my letter of the 8th of July last to Dr. Lush, as its object was chiefly to ascertain the safe arrival of mine of the 16th of April to his address, with packet as therein described.

To

* As proposed in my address of the 27th October 1832.

† See my letters, 27th October 1832, 2d April, to the Board, also 16th April to Dr. Lush, herewith.

To Dr. C. Lush, M.D., Superintendent of the Honourable Company's Botanic Garden, Dapooree, Poonah.

With your favour of the 21st ultimo I have received the small canister containing cuttings of the entire leaf variety of the *morus indica*, originally sent from St. Helena. These, you will be glad to hear, arrived four days ago in a promising state of preservation, and were immediately put into the ground. I shall be happy if the opportunity is afforded to give you the information you desire, as to the comparison of the leaves of the plants when growing, and the samples you have now sent of the large Italian white mulberry. They retain a considerable degree of freshness, particularly the smallest, though you seem to think the larger keeps its moisture longest; but this may be accidental after the journey. I have put them between the fresh folds of the plantain-leaf to be occasionally changed. They are all similar in form to the *ba-dessy* heretofore described, though varying in size, even so large as six inches by four (altogether unknown here), thus resembling the mulberry-leaf of England, but I should think of finer texture, yet not more nutritive than the *dessy kajlah* of Bengal, supposing that the worm preferred it, *which it does not.*

2. Your letter to Mr. Secretary Reid of the

31st

31st January last has been sent to me, and I have endeavoured (under date the 2d instant*) to answer all your queries in the best manner I am able; but my experience in this department is about on a par with your own, of four years at Poonah. No doubt, however, Dr Wallich will supply the most accurate information on the varieties of the mulberry-plant in Bengal.

3. I have the pleasure to send you a statement† which I had occasion to draw up two years ago, giving a minute detail of the produce of the periodical cocoon bunds throughout the year, in the silk aurungs west of the Baughrutty river, shewing the cost of rearing the cocoon and manufactured silk of different assortments,‡ to which is added the expense of cultivating a begah of mulberry land. This may be useful to you in the progress of your researches, especially considering the very little advance, from whatever cause, which you state to have been made during a period of the past ten years at Dharwar and Poonah, both in the cultivation and manufacture.

4. I should

* To the Secretary to the Board of Trade.

† See 11th April 1831, then submitted to the Board.

‡ You say the silk of Dharwar and Horblee sells in the bazaar at three and a-half to four rupees per seer. This seems remarkably cheap, if good, and you reckon forty seers to the maund, as we do.

4. I should apprehend with you, that the ultimate success of Signor Matti's plantations of the standard, from which he is still looking forward two years more to obtain leaves of the fourth year, according to the Italian mode adopted by him, seems rather problematical: the more so, as I have before shewn, that the standard leaf is not the most desired by the worm, neither do they thrive on it in Bengal. Moreover your opinion is corroborative of the fact, "the more frequently the indigenous *kajlah* plant (on which the worm flourishes) is cut down, the better, and more tender the leaves; and that old trees become straggling, producing inferior leaves."

5. I have yet to learn what the *doppia foglia* may be productive of, the soil best adapted to it, and whether it will bear cutting and being kept low: problems which will develope themselves, when once we have got the plant up. This I hope to arrive at, with your kind assistance.

6. Conformably with my promise of the 25th of February last, I have now the pleasure to send you *specimens of cocoons from eggs you sent* round, as those received from St. Helena, together with small samples of the silk spun therefrom on different dates, all bearing the same character given in my letter above quoted, eighth paragraph, namely, tenacity of fibre, and softness approaching to the silk of our annuals, which bears the closest

closest affinity to the best Italian silk, but from a smaller cocoon, and having a tinge* of green.

7. To enable you to make the comparison, I have added specimens of our annuals, and two small skeins of white and yellow silk of the March bund, large. But we have not been very lucky in the produce of this season.

8. I have never met with any treatise on the culture of the mulberry and manufacture of silk in China. Dr. Lardner is all but silent on the subject; except, indeed, his quotation on the authority of Du Halde, in his History of China, that the trees are stinted in their growth; and also quoting from Nollet, "that in China only two crops are obtained in the year." If so, the process accords with that of Italy. But this limitation may well be doubled, from the immense importation into England alone which we read of, amounting to 7,000 bales of China raw silk in the past year; thus exceeding the export from Bengal (the season having been adverse), if the bales were of two maunds each.

9. Perhaps your Government may, on your suggestion, be induced to obtain written information from the authorities at Canton, which eventually might afford useful hints in promoting

* But this tinge is perhaps immaterial, for the reasons assigned in the fifth paragraph of my letter to the Board of Trade, 2d April.

moting the art, both on your side of India and ours.

10. In conclusion, I am happy to say that I have secured a considerable quantity of the eggs supposed to be annuals, wherewith in due season to propagate the breed, and complete the experiment by feeding on the *doppia*.

I have, &c.,
(Signed) COLIN SHAKESPEAR,
Resident.

Soonamooky Residency,
Bengal,
16th April 1833.

P. S. Copy of your letter, now under reply, was immediately submitted, through the usual channel, for the information of Government, in continuation of our correspondence.

To C. Shakespear, Esq., Commercial Resident, Soonamooky.

I have to apologize for not having duly acknowledged the receipt of your despatch of the 16th April, accompanied by the specimens and statements, but as I was daily looking for the arrival of the *Pottery ghye* apparatus by sea, I deferred any further observations in expectation of its arrival; a circumstance which I now regret, as it has led you to think the communication was not received.

2. As soon as any attempt is made in earnest to produce silk here, I will not fail to make use of your valuable information, for the benefit of any persons who may come forward; but at present nothing is doing, excepting under the delusion I formerly mentioned, of growing large trees only, to the neglect of the ordinary Indian practice.

3. Since my last letter to you, I have despatched by sea two boxes of living plants, both of the larger variety of white mulberry and the *doppia foglia*. These were consigned to the Secretary to Government in the Territorial Department, Calcutta. I am not aware of the date of sailing. I will not fail to adopt your hint, respecting forwarding the cuttings of the *doppia foglia* and other new sorts.

4. I am happy to inform you, that I have received living trees of the Italian white mulberry by the *Hugh Lindsay* steamer. They were mostly six or eight feet in height, with roots, and were packed in moss. Nearly all are alive, and as soon as the shoots have formed wood of sufficient hardness to allow of cutting, I shall take an opportunity of forwarding a portion to you. They are chiefly the same with the *doppia foglia*, and some perhaps the same with the larger variety from St. Helena, but not so uniformly entire or divided in the varieties as formerly received. Their identity, or otherwise, with the others, can be better judged of when more fully grown.

5. I think the specimens you kindly forwarded

to me of the cocoons of the annual worm of Bengal, for comparison with those of the St. Helena worm, are so conclusive in favour of the *former*, that it appears of little importance to continue the St. Helena breed; which indeed, I regret to say, has by this time become so degenerated, that in spite of the greatest care, I fear I shall not be able to restore it.

6. The hail-storms in May last have much injured the European mulberry-trees in the garden; but when the later shoots are further advanced, I will continue my supplies in the tin cases.

I am, &c.

(Signed) Charles Lush,

Superintendent Botanic Garden, Dapooree.

Dapooree, near Poona, 2d Aug. 1833.

Extract Letter from the Resident at Soonamooky to the Board of Trade, dated 11*th April* 1831, *above referred to, page* 161.

Particulars of the produce of cocoon bunds throughout the year, in the Gonatea and Rangamatty aurungs, west of the Baughrutty river, showing the cost per seer in each bund, and produce in silk of different assortments.

1831. October (or *Kartick*), November (or *Urgwhyne*), January (or *Poos.*) From the hatching the egg in these bunds to the completion of the cocoon-pod, forty to sixty days may be taken as the average. Price two khwans per rupee.

Sixteen dollahs produce one gurrah or forty-eight khwans of cocoons, requiring fourteen loads (or bundles) of mulberry-leaves, at one rupee .... Rs. 14 0 0

Price of eggs..........................	1	0	0
Two coolies............................	3	0	0
Total......Rupees	18	0	0

The 48 khwans yielding 2 seers 12 chittacks of Silk, No. 1 and 2 A, 4 to 5, 7 to 8 rupees..............................	8	8	0
Average khwans per seer, 17 to 18, 18 to 19, medium of premium................	0	7	4
Per seer,......Rupees	8	15	4

March (or *Choyte*) bund, large cocoons from the egg, produced in fifty-five to sixty days. 1 khwan 10 pon per rupee.

16 dollahs, or one gurrah of 24 khwans, requiring fourteen bundles of leaves, at 1 rupee each............................	14	0	0
Price of eggs..................................	0	4	0
Two coolies....................................	3	0	0
Total......Rupees	17	4	0

The 24 khwans yielding 2 seers 4 chittacks of silk No. 1 and 2 A, 4 to 5, 7 to 8..	8	8	0
Average khwans per seer 13 to 15, 23 to 24, medium of premium..............	0	7	4
Per seer,......Rupees	8	15	4

March, small cocoons from the egg are completed in fifty to sixty days. Price 3 khwans 4 pon per rupee.

16 dollahs or one gurrah of 45 khwans, requiring 13 bundles of leaves, at 1½ per rupee	8	8	0
Price of eggs	1	0	0
Coolies	3	0	0
Total......Rupees	12	8	0

The 45 khwans yielding 2 seers 2 chittacks of Silk No. 1 B, 1 C, of 10 to 12. Fixed price 7 rupees. Average of khwan per seer 16 to 17. No premium.

April (or *Bysack*) cocoons from the egg are completed in thirty or thirty-two days. Price 3 khwan 8 pon per rupee.

16 dollahs or one gurrah of 32 khwans, requiring eleven bundles of the leaves, at 1½ bundle per rupee	7	6	0
Price of eggs	0	8	0
Coolies	2	8	0
Total......Rupees	10	6	0

The 32 khwans yielding 1 seer 10 chittacks of silk No. 2 B, 2 C, of 10 to 12. Fixed price rupees 7. Average of khwans per seer, 16 to 17. No premium.

July (or *Srabun*) cocoons from the egg are completed in twenty-eight to thirty days. Price per khwan 3 to ⅜ per rupee.

16 dollahs, or one gurrah of 32 khwans, requiring twelve bundles of the leaves, at two bundles per rupee......Rs.	6	0	0
Price of eggs	0	8	0
Coolies	2	8	0
Total......Rupees	9	0	0

The 32 khwans yielding 1 seer 8 chittacks of silk No. 2 C, 18 to 20. Fixed price Rs. 6 12. Average of khwans per seer 28 to 31. No premium.

Abstract of five bunds, *viz.* October, November, January, as one;

March, large two; small three; April four; July five;—181 khwans of cocoons, producing 10 seers 6 chittacks, at the cost of sicca rupees 67. Thus making the general average cost of cocoons, rupees 6. 8. per seer, which in 1826 was rupees 10 2. Difference rupees 4. 6. in 1831.

Recapitulation of the Prices of the Seven Bunds.

Bunds.					
1 October, 1 November, 1 January,	16 dollahs 1 gurrah or 48 khwans of cocoons.	Yield 2 seer 12 chittacks of silk, No. 1 and 2 A, of size 4 to 5, and 7 to 8, average khwans per seer 17 to 18, 18 to 19. Fixed price 1831,			
		Rupees...............	8	8	0
		Medium of premium	0	7	4
			8	15	4
1 March large 24 ditto.		Yield 2 seer 4 chittacks of silk, No. 1 and 2 A, of size 4 to 5, 7 to 8, average khwans per seer 13 to 15, 23 to 24. Fixed price 1831.			
		Rupees...............	8	8	0
		Medium of premium	0	7	4
			8	15	4
1 March small 45 ditto		Yield 2 seer 2 chittacks of silk, No. 1 B and 1 C, of size 10 to 12, 12 to 14. Fixed price rupees 7. No premium.			

1 April	32 khwans of cocoons	Yield 1 seer 10 chittacks of silk, No. 2 B and 2 C, of size 10 to 12, 12 to 14. Fixed price 1831. Rupees 7. No premium.
July	32 ditto	Yield 1 seer 8 chittacks of silk No. 1. 2 C, of size 18 to 20. Fixed price 1831. Rupees 6. 12. No premium.
		Average cost of cocoons per seer Rupees.............. 6 8 0
		Ditto of silk per seer, at the fixed rate of 1831 7 8 9
7 Bunds	181 khwans of cocoons.	

About forty-five begahs yield a maund of silk, or one begah and a fraction to a seer.

The Nerick of the high lands vary per begah from three to five rupees.

Ditto of low lands, from one and a quarter to three rupees.

The plant yields five crops in the year throughout; but the price per load fluctuates, even so much as from eight annas to two rupees (and upwards in adverse seasons); the medium is therefore taken of one rupee per load.

The charges for cultivating one begah of mulberry-land is under ten rupees per annum, including rent, *viz.*

Average Revenue or Rent per begah, Rs.	4	4	0
Manure (saur)................................	1	8	0
Labour of forty days in the year.........	4	0	0
Total......Rupees	9	12	0

Which

Which begah produces fourteen loads, at one rupee each	14	0	0
Gain......Rupees	4	4	0
If forty-four bundles are obtained in the year from one begah, the produce will be	44	0	0
Deduct charges cultivating and rearing	9	12	0
Profit......Rupees	34	4	0

COLIN SHAKESPEAR,
Resident.

Soonamooky Residency,
11th April 1831.

No. 15.

LETTER *from the Superintendent of the Company's Botanic Garden to the Secretary of the Board of Trade, dated the 28th September* 1833.

I request you will permit me to enquire, whether the Board of Trade is in possession of any information relative to two chests of mulberry-plants which have come round from Bombay on the *Sir Charles Malcolm*. Yesterday afternoon I received the first and only intimation of this consignment, in a note from the Commander, in which I was informed that the plants had arrived off Calcutta more than ten days ago. I sent for them directly,

directly, and I am happy to say that they are in a very thriving condition, highly creditable to the care bestowed on them by Captain Tudor, both during the voyage and after their arrival in port. There are altogether thirty-three plants, small and large, and they appear of the same sort as those which you forwarded to me with your letter of the 22d April last (the Italian white-mulberry).

2. With regard to the last-mentioned consignment, I beg leave to avail myself of this opportunity for reporting to the Board, that out of the nine plants that arrived, I have succeeded in getting six to grow vigorously, and that several layers have been made for them.

No. 16.

MINUTE *of the Bengal Board of Trade, 3d October 1833, with Letter to the Superintendent of the Company's Botanic Garden, and to the Resident at Soonamooky.*

ORDERED, That the Superintendent of the Botanic Garden and the Resident at Soonamooky be written to as follows:

To

To N. Wallich, Esq., Superintendent of the Botanic Garden.

I am directed to acknowledge the receipt of your letter dated the 28th ultimo, and, in reply, to inform you, that the Board of Trade had previously been apprised of the two boxes of mulberry-plants having been laden on the *Sir Charles Malcolm* at Bombay for this Presidency, but were not aware of the plants having arrived off Calcutta. The Board desire me to express their satisfaction at their having reached you in so thriving a condition. They are much gratified, also, at learning from the second paragraph of your communication, that the plants forwarded to you in April last are likely to turn out so well.

2. The Commercial Resident of Soonamooky having requested to be supplied with a few of the plants just received, the Board will be obliged by your furnishing him, on his application, with a small proportion thereof.

To Colin Shakespear, Esq., Resident at Soonamooky.

I have been directed to acknowledge the receipt of your letter with enclosure, dated 20th August, and with advertence to the third paragraph thereof, to intimate to you, that the two boxes of mulberry-

mulberry-plants have arrived in Calcutta, and been forwarded to the Superintendent of the Botanic Garden, who has been required, on your making application to him, to furnish you with a small portion of the plants, as desired by you.

No. 17.

Letter *from the Secretary to the Bombay Government to the Secretary to the Bengal Government, dated the 1st July 1834, with Enclosure.*

I am directed by the Right Honourable the Governor in Council to transmit to you, for the purpose of being laid before the Honourable the Vice-President in Council, the accompanying copy of a letter from Dr. Lush, Superintendent of the Botanic Garden, at Dapooree, dated the 25th ultimo, and to submit the request of his Lordship in Council, that measures may be taken to supply the silk-worms' eggs by that gentleman.

To Charles Norris, Esq., Chief Secretary to Government.

I have the honour to request that the Honourable the Governor in Council will please to direct

application

application to be made to Bengal for supplies of the annual silk-worms' eggs, to be despatched to this place by post, also for any other such eggs as may be likely to stand the journey. Having received a requisition from the Session Judge at Dharwar for a supply, in consequence of a great mortality among the worms there, it is my intention, in the mean time, to send to that station such eggs as may be procured in this part of the Deccan.

My reason for wishing for the Bengal kind is, from a comparison which I was enabled to make between the produce of the Italian eggs sent by the Honourable the Court of Directors from St. Helena, and that from the Bengal worm sent by Mr. Colin Shakespear from Soonamooky. The superiority of the latter renders it unnecessary to continue to breed from the St. Helena stock.

I take this opportunity of acquainting you, that I have established both the breeds sent here from St. Helena in the factory at Soonamooky under the care of Mr. Shakespear (after having supplied the persons who attempted to grow silk in the Deccan,) agreeably to the instructions of the Honourable Court of Directors.

No. 18.

MINUTE *of the Bengal Board of Trade, 24th July 1834, with Letter to the Resident at Soonamooky, and his Reply thereto, dated 29th July* 1834.

ORDERED, That the Resident at Soonamooky be written to as follows:—

To Colin Shakespear, Esq., Resident at Soonamooky.

I am directed by the Board of Trade to transmit to you the accompanying copy of a letter from Mr. Secretary Prinsep, dated the 21st instant, with a copy of its enclosure, and as the Board observes that the silk-worm eggs furnished by you to the Superintendent of the Botanic Garden at Dapooree, upon a former occasion, appear to have succeeded so well and proved of so superior a quality, they request you will be pleased to comply with Dr. Lush's request as far as it is in your power, as it appears a large supply is now required, and in compliance with the directions of Government expressed in the copy of Mr. Prinsep's letter herewith.

To J. Abbott, Esq., Officiating Secretary to the Board of Trade.

SIR:

In acknowledging the receipt of your letter of the 24th instant,* with the orders which accompanied, from Government and the Board of Trade, to furnish the Superintendent of the Botanic Garden at Poonah with further supplies of the silk-worm moth eggs, "in consequence of those previously sent by me having succeeded so well and proved of so superior a quality," I beg to observe that the Board appear to have misunderstood Dr. Lush, to whom no eggs have been sent by me. In his letter of the 25th ultimo to Mr. Chief Secretary Norris, second paragraph, the Doctor states as follows: "My reason for wishing for the Bengal kind is, from a comparison I was enabled to make between the *produce* of the Italian eggs sent by the Honourable the Court of Directors from St. Helena, and that from the Bengal worm sent by Mr. Colin Shakespear from Soonamooky. The superiority of the latter renders it unnecessary to continue the breed from the St. Helena stock."

2. Samples

* Shewing the superiority of the silk-worms of Bengal, compared with those raised from Italian eggs received *viâ* Poonah at Rangamatty.

2. Samples of the cocoons* of the Italian breed and silk spun therefrom, accompanied by similar samples of the indigenous cocoon and silk simultaneously manufactured in the annual or March bund large of 1833, were together sent by dawk to Poonah, on the 16th of April. These proved decisive of the superiority of the country produce here, and enabled the Doctor to determine in favour of the latter. Fortunately the Italian eggs were also of the annual raccolta or harvest; the experiment was therefore put to the best possible test, at the most approved season.

3. An explanation of these results is given in the fourth and fifth paragraphs of my letters to the Board of the 2d of April 1833 and 27th of August, with its accompaniments from Dr. Lush.

4. I shall readily avail myself of every opportunity to send supplies of eggs to Dr. Lush when procurable in the ensuing bunds; and conclude, as large supplies are wanted, those of Hurripaul and Commercolly will be put also in requisition, as equally good, if not superior.

5. I have now in my garden several well-grown mulberry-trees raised from slips received by dawk from Poonah, as originally from Italy, imported by the steamer *viâ* Bussorah, also a flourishing plant of the desired *doppia foglia* or double-leaf, the

* From which the grubs had been taken out and the pods stuffed with cotton.

the *morus alba* of Italy; the only one perhaps in Bengal, unless Dr. Lush succeeded in sending others to Calcutta. The Board are aware that I sent plants of the first-mentioned kind to the Horticultural Society of Calcutta, which arrived safe; and my letter of the 27th of October 1832 is descriptive of the nature of the mulberry-plants of these aurungs, those most nutritive and eagerly desired by the silk-worm, and the process of cultivation.

(L.)

1. Extract Letter from the Bengal Board of Trade to the Vice-President in Council, dated 29th July 1831, referring to new *ghyes*, or furnaces, invented by the Residents at Radnagore and Soonamooky, and suggesting the expediency of establishing an Experimental Filature, for ascertaining the relative merits of the same, and of other inventions for the improvements of Silk.
2. Extract Letter from the Bengal Board of Trade to the Vice-President in Council, dated 20th August 1832, reporting the experiments at the said Filature, and recommending the construction of pottery ghyes at all the factories where the old standard basins are used, and where the alteration can be effected without impeding the current work.
3. Explanation of the New Pottery Ghye Apparatus for spinning Raw-Silk, composed by Mr. Colin Shakespear, Resident at Soonamooky.
4. Extract Letter from the Secretary to the Bengal Government to the Board of Trade, conveying the concurrence of Government in the Board's opinion of the superior merit of the pottery ghyes, and directing the Board to issue the requisite instructions for their gradual or immediate adoption.
5. Extract Letter from the Court of Directors to the Governor-general in Council, Bengal, dated the 11th September 1833, regarding the quality of two specimens of Silk spun at the Experimental Filature.
6. Minute of the Bengal Board of Trade, 10th October 1833, containing the report of their Secretary of the operations carried on at the Experimental Filature whilst under his supervision, with a statement of the manufacturing charges thereat, contrasted with those incurred at the neighbouring Filature at Cuttorah.

No. 1.

EXTRACT LETTER *from the Bengal Board of Trade to the Honourable the Vice-President in Council, dated the 29th July* 1831.

We have now the honour to report, that the senior Member of our Board proceeded to the Radnagore aurungs for the purpose of inspecting some of the filatures, the ghyes of which had recently been altered after a plan proposed by the Resident, Mr. Becher, and sanctioned for all the Radnagore filatures, as intimated in Mr. Officiating Secretary Bushby's Letter of the 3d May last.

It will be in the recollection of your Honour in Council, that Mr. Becher's plans had for their object, first a saving of fuel equal to seventy-five per cent., as compared with the quantity consumed in the ordinary ghyes or furnaces. Secondly, a small saving in the mode of supplying water for the basins, by means of pipes with cocks, for conducting it from a reservoir erected near a tank, whence the water is drawn in a perfectly clear state by buckets dipping into the centre of the tank. instead of the usual mode of drawing it from the side, where it is more or less dirty. Thirdly, to give double the number of basins in the same filatures, should they require to be all used together.

After

After a very particular inspection of these new works when in operation, our senior Member satisfied himself that Mr. Becher had fully succeeded in effecting the above desirable objects, and he deserves, we think, great credit for the ingenuity and economy his invention displays. There are, however, further points for consideration (independently of instituting a comparison between Mr. Becher's and Mr. Shakespear's plans, after one of the Members of our Board shall have visited the Gonatea Residency for that purpose), before we propose to introduce generally at the silk filatures these or any other alterations involving expense.

These points are the manner in which economy and *improvement* in the manufacture of the silk can best be combined; for the attainment of the one at any sacrifice of the other, might not only neutralize all advantage, but prove a positive loss in the end. Thus we entertain some doubts, whether the use of copper basins, such as those introduced by Mr. Becher, might not tend to injure the colour of the silk of the white cocoons; and whether doubling the number of skeins wound off on one reel, may not cause confusion* to the spinners when

* By Mr. Becher's method, four spinners work at one long basin (called a quadruple). Each spinner forms two threads, or skeins; therefore there being only two reels to the basin, each reel must carry the work of two spinners, or four skeins, whence the liability to the hindrance and confusion adverted to.

when a thread breaks, and prevent their performing their work with that degree of evenness and nicety, which is essential to the quality of the silk, on which depends its selling price in England. We speak, however, with diffidence on these points, as the experiment is only a recent one, and it should be submitted to the test of more minute inquiry.

The foregoing considerations have suggested to us the expediency of establishing *an experimental filature* immediately under our own supervision though nominally under the charge of our Secretary or his Assistant, to be conducted by an experienced native gomastah; and the services of such a person are now procurable who was supervisor at Gonatea, and succeeded in manufacturing some of the best silk ever produced in this country. The outline of the plan is as follows:

That an experimental filature be got up within a short distance of Calcutta, and within the range of the cocoon aurungs, consisting of from one hundred to one hundred and fifty basins, to be constructed after the plans submitted by Messrs. Becher and Shakespear, from each of which a saving is said to be effected of seventy-five per cent. in fuel. That other ghyes likewise, which have been strongly recommended to the Board, be tried; also Mr. Becher's water-works, and the steam apparatus as used at Commercolly; several new plans for reels to be tried, and the various improvements

improvements which have from time to time been suggested to the Board by ingenious individuals zealous for the improvement of the silk.

No. 2.

EXTRACT LETTER *from the Bengal Board of Trade to the Honourable the Vice-President in Council, dated the 20th August* 1832.

On the receipt of Mr. Acting Secretary Bushby's letter of the 9th August, conveying the sanction of your Honour in Council for the erection of this filature, we addressed a circular letter* to the Silk Residents, directing them to submit any observations they might have to offer on the existing system in all its details under which silk is manufactured at the Company's factories, and to state in what respects the process of manufacture was susceptible of improvement, both with a view to economy and perfecting the quality of the silk.

Messrs. Becher, Shakespear, and Richardson, who had previously submitted plans (that of the latter being a ghye invented by Captain Somerville), were particularly called upon to communicate any further observations which experience had enabled them to make, on the practical advantages

* Of the 16th August 1831.

tages to be gained by the general introduction of their improvements. They were also instructed to send native bricklayers to Howrah, to superintend the erection of the works proposed by them.

Mr. Becher intimated, that he had introduced some recent alterations and improvements in his *quad basins* since he originally recommended their erection at Rungpore, where indeed they have in a great measure failed; and as the trial at Howrah was to determine the comparative merits of their several ghyes and basins, and would probably lead to the introduction of one or other of them at all the Company's factories, we were desirous that the fullest opportunity should be afforded for each party to display the merits of his own invention, and accordingly requested Messrs. Becher and Shakespear, when on leave at the Presidency, to superintend in person the erection of their quads and pottery ghyes. Mr. Richardson not being able to procure a person properly qualified to erect a Somerville furnace, Lieut. Mallock, of the Military Board, at our request undertook to do this, after the plan recorded in that office.

We thus had under our own immediate inspection the three descriptions of basins and ghyes, the comparative merits of which alone admitted of any dispute (for Captain Sage's plan had been some time before set aside by the Board, as being too expensive for general adoption and otherwise objectionable,)

objectionable,) and our Secretary, who obligingly undertook the management of the Howrah filature, reported to the Board, under date the 10th May last, that the buildings had been completed at a cost, the particulars of which appear in his note recorded on our proceedings herewith submitted, also the several statements exhibiting the result of the experiments made with a view to ascertain the smallest quantity of wood which would suffice for the manufacture of an equal and given quantity of silk, of the same letter or quality, at each description of ghye. They alike exhibited a saving of about seventy per cent. in the article of fuel, as compared with the old standard ghyes, and the other items of charge for manufacture also proved nearly the same at each. Although a very close comparison cannot be made with respect to the general manufacturing charges at all the factories, without an accurate calculation of the quantity of silk of the different letters manufactured at each of the filatures, we nevertheless feel assured that the experiments which have been made, and will continue to be conducted by us in every description of silk, until we shall have defrayed by savings the cost of erecting the Howrah filature, will enable us, with a knowledge of the price of fuel and labour at each factory, to institute a narrow check over the charges on this head.

The advantages of the quad basins, pottery ghyes, and Somerville furnaces, are so warmly ad-

vocated

vocated by their several projectors, and their merits in most respects so nearly equal, that we find it difficult duly to apportion our recommendation in favour of each of them. At a time when it was considered desirable to add to the number of basins, without incurring further expense in the enlargement of the filature buildings, the quads appeared to possess the paramount advantage over all the other plans, combined with that of economizing fuel; but Mr. Becher, with all his increased means of manufacturing silk at the Company's basins, of which there are now at Radnagore 2,794, has failed to procure cocoons more than sufficient to employ one-third of that number, the remaining portion of the silk provided by him being furnished by contractors, as has been generally the case at Radnagore and Hurripaul. Thus the object of adding to the number of his basins is defeated.

Various are the causes assigned for the Radnagore Pykars objecting to their cocoons being wound off at the Company's basins, at the same price allowed at all the other factories; but as they are paid *on the seer* of silk procured, it is natural to suppose that they would object to any newly invented basin or reel, which might have a tendency to lessen the produce of their cocoons by wastage, or in any other way; and that the quads possess this defect *in a certain degree* (though this has been greatly exaggerated at Rungpore) is clearly shewn, by statements submitted with our Secretary's note of

of the 10th May. With a view, however, to investigate this point more narrowly, we directed that a series of experiments should be conducted under the immediate eye of Mr. Bracken, and the following is a copy of that gentleman's letter reporting the result.

To F. Macnaghten, Esq., Secretary to the Board of Trade, Fort William.

I have the honour to report, for the information of the Board of Trade, the result of the experiment at the Howrah silk filature on the 23d instant, between the pottery and the quadruple ghye, which the Board was pleased to direct me to superintend in your letter of the 21st instant.

2. To each spinner were delivered seven khwans of cocoons.* The spinning was began at half-past seven A. M., and (exclusive of one hour for the workmen's dinner) terminated at half-past six, P. M., each man producing eight skeins. The evening being too far advanced to admit of further work, the cleaning and weighing of the silk were postponed to the following morning.

The

* To be wound into B No. 1, that is, ten to twelve cocoons to a thread.

Description of Ghye.	No. of Ghye.	No. of Men.	Produce.		Average each Man.	
			Seers.	Chts.	Seers.	Chts.
Pottery...	4	4	1	5¾	—	—
Somerville	2	2	—	9¼	—	5⅛
	6	6	1	15	—	
Quadruple	1	4	1	½		
	1	4	1	1¼		
	1	4	1	1¼		
	1	4	1	3*	—	4⅜
	4	16	4	6		
Difference in favour of Pottery Ghye......						¾

* A greater proportion of *topah* was included, and therefore excess of weight.

The marginal statement will exhibit in one view a small fraction, one twenty-fourth more than three-fourths of a chittack in favour of the pottery ghye, which, the value of a seer of silk of that description, inclusive of manufacturing charges, being about 8 rupees 7 annas, thus:

	R.	A.	R.	A.
Cocoon cost	7	4	8	7
Manufacturing charges	1	3		

is a saving of about 1 rupee 7 annas, or 3 khwans 14½ pon of cocoons, for every seer of silk produced, as per margin,* that is, about 1 rupee 3 annas, exclusive of manufacturing charges.

The

	K.	P.
Quad per seer	25	9½
Pottery do.	21	11
Difference	3	14½

The pottery ghye, too, appears to have no little advantage in point of time, for the several spinners at these basins had almost completed six skeins, before those at the quadruple (though I could observe no unnecessary delay) had completed four; yet these, I understood, were some of Mr. Becher's first-rate men, and as workmen, apparently superior to the others. Had the spinners, indeed, at the pottery ghye been equally skilful, the produce would doubtless have been greater than it was.

The comparative loss of *phullun* from the quadruple ghye, I apprehend to be the necessary consequence of the mode of manufacturing, which restricts two men, spinning at the same time, to the same basin and the same reel. In order to secure the greatest possible produce, (other things being equal,) cocoons on being wound off require for their separate stages separate degrees of temperature, *so that, as long as the cocoons of both* are not precisely in the same state of forwardness, which must not unfrequently occur, one man will be working at a disadvantage and a certain loss of *phullun*. Moreover, when either spinner is compelled to stop the reel, the other, whether requiring it or not, is so far subjected to detention also; but both being anxious to prevent this delay to his companion, are often so hurried in removing a bad thread, that good and bad are removed together, which, though increasing the quantity of chassum, must lessen that of wound silk. In the

the chassum of the quadruple ghyes I observed many good threads, which I have no doubt the same spinners, had each been at a separate basin, would have wound off into good silk.

The expenditure of wood for the experiment was twelve seers eight chittacks each man, but ten or eleven seers per diem would probably be sufficient for the same purpose. Though I am of opinion that, in this respect also, the pottery ghye, by reason of the admirable construction of its fire-place, which causes the smoke to circulate round and round the basin before it escapes through the chimney, would have the advantage of a smaller expenditure.

As to the quality of the silk in the instance of this experiment, that spun at the pottery ghye appears to be superior to the other. The colour is better. All the copper basins, unless very effectually tinned over, which those of the quadruple were not, must discolour the water, and of consequence the silk. It is likewise less flat and knibly, which I can attribute only to the threads passing round over the reel, instead of under, as in the quadruple ghye; for I observed that the number of twists of the two threads were the same in both. In consistency of thread the produce of both seems equal; and, in this respect, superior to what was spun at Captain Somerville's, the construction of whose reel appears to be somewhat opposed to this quality. I may remark, that

that the basin of Captain Somerville's ghye is of copper, and the principle of its fire-place very inferior to Mr. Shakespear's.

I have the honour to be, &c.

(Signed) W. BRACKEN.

Calcutta, 29th June 1832.

The above report entirely accords with our own general observations, and the opinions offered to us by Mr. Watson and other gentlemen, who saw the quads at work, and who are practically versed in the art of reeling silk.

Your Honour in Council will understand from Mr. Becher's description of his quad basins, that four spinners work at one and the same basin, having two reels attached to each, so that the silk of two spinners is wound off on one reel. Thus, when *either breaks a thread, the other stops and generally* gets his thread entangled, which causes confusion, delay, and wastage, in a more or less degree, as the spinners are accustomed to the use of the quads. From these and other defects, inseparable from the use of these basins, we cannot but think it very inexpedient that their adoption should be extended to all other factories.

In offering this deliberate opinion, however, we think it due to Mr. Becher to observe, that there is considerable ingenuity in his plan, whereby a saving in fuel, equal to that at either the pottery or Somerville ghye, is effected, and double the number

number of basins are capable of being erected under one roof. The manufacturing charges at the Radnagore Residency since Mr. Becher was appointed there, have also been considerably reduced, and are lower than at any other factory, which is mainly attributable to the use of his quads. The same advantages* will, of course, attend the general introduction of the other ghyes; but Mr. Becher's have had the precedence.

The late Captain Somerville, unquestionably, had the merit of first bringing forward his plan for the improvement of the Commercolly furnaces; and which, though it has been but partially adopted at that factory, has been productive of a saving of Sicca Rupees 9,308. 2. 5., as is shewn by the Resident's last report on the subject. We give the preference to the Commercolly reel over all others, though some alteration should be made in its dimensions (diameter), so as to reduce the skeins of silk to the size most approved of by the Court of Directors.

It now only remains for us to observe, that of all the plans which have been submitted for the improvement of the ghyes, &c., Mr. Shakespear's pottery ghye stands pre-eminent, as it combines simplicity and cheapness* in its construction, and efficiency

		R.	A.	P.
* Cost of each quad with copper basin set in masonry, water-pipes, cocks, &c., equal to one pair of single ghyes, or four single basins	..	72	4	0

Cost

efficiency to economize fuel, with a peculiar fitness, we think, to improve the quality of the silk manufactured at it. The principle of conducting the heat round the basin, closely resembles that applied by Captain Somerville.

We respectfully conclude, by recommending that a copy of Mr. Shakespear's plan and estimate of his pottery ghyes be forwarded to the Military Board, and that the executive officers in the Building Department be directed to communicate with that gentleman in all further points of information required; and we have no hesitation in urging the construction of pottery ghyes at all the factories where the old standard basins are now used, and where the alteration can be effected without impeding the current work.

	R.	A.	P.
Cost of one pair of Somerville ghyes, with four copper basins and iron doors	95	5	4
Cost of one pair of pottery ghyes of four basins, with chimneys, &c. complete	18	1	2

No. 3.

EXPLANATION *of the full-sized Skeleton Model of the new Pottery Ghye Apparatus for Spinning Raw-Silk, composed in December* 1829, *by Mr. Colin Shakespear, Resident at Soonamooky.*

The furnace-stove and ash-pit, resembling a large flower-pot in a deep stand, setting one on the other, are of substantial well-burnt pottery, closely cased in bricks moulded to their form, surrounded by others of a concave shape, forming the circular smoke-flue and rest of the round earthen basins (or ghye) with conical bottom about six inches deep, thus dipping into the furnace, around which the flame plays. Its circular form also adapts itself more readily to the surrounding flue than the irregular form of the copper basin.

2. To produce this solid case, leaving open the smoke-valve and doors of the furnace and ash-pit, seventeen different moulded bricks are used, yet the result is perfectly simple.

3. But the furnace-mouths, instead of being at the outer extremity of the setting right and left, are within, facing each other. This scheme (peculiar, I believe, to Gonatea) tends to condense heat. I have further improved it, by advancing a covered way, twenty-two inches deep, from the furnace, which while it effectually screens the orifice

orifice, protects the spinner, and admits of the application of a small chimney-board with a register (at the cost of six annas) in substitution of very expensive double iron doors, which at the best have but a bad hold of the bricks and are soon shook by the fire-boys.

4. These pottery ghyes, a pair of which can be completely set in a few hours in the solid case of moulded bricks, and used the next day, burn quite clear, with great facility of getting up the required heat, and are perfectly free from smoke (no reel cloths are therefore required, which is a further saving;) added to which, the great desideratum of a more equable temperature is unquestionably obtained throughout the several beats, say from 195 to 200 degrees, or from 10 to 12 below boiling heat, while the consumption of fire-wood at Rangamatty, for the whole day's spinning in each ghye, is reduced seventy-five per cent. (*viz.* from one maund to ten seers) or to one-fourth, and being an expenditure of only one maund ten seers to a seer of silk, instead of five.

5. No part of this ghye structure coming in contact with fire, water, and smoke, is susceptible of injury by immediate use. This alone, in renewing ghyes, is a great advantage in a manufacture, where time is so precious, and a fruitful bund not admitting of delay. In proof, one hundred and twenty pottery ghyes were brought into immediate use at Rangamatty, built progressively

day after day, in substitution of old-worn-out ghyes. Now, on the old plan, months are necessary to build and dry.

6. The cost of a pair of these pottery ghyes, including two smoke-tubes of two feet long by three and a-half inches diameter, and a water-gumlah (not porous) embedded in mortar, as a cistern, is seven sicca rupees: yet their unique solidity and durability will further tend to economy.

7. Now the cost of a pair of flue-ghyes at Commercolly (according to the Superintending Engineer's report of the 23d May 1829 to the Board of Trade) with double iron doors and copper basins, burning sixteen and a-half seers of wood, exceeds forty-three rupees, being six times the price of a pair of finished pottery ghyes, and consuming six and a-half seers more of fuel in each ghye to produce the same quantity of silk.

8. It will be seen by the model of this *left*-hand ghye, that the smoke passes round from the furnace-valve to the left, through the circular flue, to the chimney on the *right*. Its escape is thus retarded, and its warmth communicated to the upper sides of the basin, which otherwise would be buried in mortar. This part of the scheme is Captain Somerville's. But his flue is not produced by concave moulded bricks, and he uses the oval flat-bottomed copper basin with straight sides, the form of which, he admits, "may be improved with advantage, but this he had not tried." His diagrams

diagrams and sections do not (that I can discover) give the method of building up the interior of the inverted hollow cone, to meet the flat-bottomed shallow oval copper basin: he merely says, "it is so constructed as not to be liable to injury;" but this indefinite remark can hardly be considered a guide to those who, like myself, have not seen his flue-ghye.

April 1830.

I venture now to add, with all deference, that after ten months' practice and close observations of the effect of the pottery-ghye, above one hundred and twenty of them having been worked throughout each of the six bunds, that it merits the character assumed at the onset, *viz.* of unexampled economy in fuel, yet much comparative quickness in getting up the required heat for the first beat (or *kholic*), with total absence from smoke and the chemical impurities of copper basins; much simplicity and compactness of structure, with cheapness and expedition, yet possessing superior durability and cleanliness; but above all, a more equable temperature of heat, not yet, I imagine, obtained in any other of the Honourable Company's filatures, as far as I have heard; for I have *never seen* any, excepting those of Gonatea and Rangamatty, and it is too much to expect that a new invention, having all the advantage above set forth by its partial projector, should not be closely criticised and disputed.

The

The pottery scheme is, however, susceptible of being easily put to any comparative test by scientific persons, and it certainly is well worth while; for even the Pykars (who are not easy to please) avow that "silk manufactured with the new apparatus is of improved colour and softness, yielding also a fractional reduction in the average of khwans of cocoons per seer."

No. 4.

Extract Letter *from the Bengal Government to the Board of Trade, dated 27th September* 1832.

I am directed to acknowledge the receipt of your two letters, dated the 20th and 27th ultimo, on the subject of the experimental ghyes of different constructions erected at Howrah, and the result of various experiments made under the Board's orders, to ascertain the merits of each kind respectively.

2. From the general result of these experiments, it appears that the saving of fuel is about equal, or seventy per cent. upon the old ghyes, at each of the three improved basins, *viz.* Mr. Becher's quadruple, the late Captain Somerville's improved native ghyes, and Mr. C. Shakespear's pottery ghyes. But the last are considered by the

the Board to possess very decided advantages over both the others: first, from the cheapness of their construction; and secondly, as compared with the quadruples, from the superior quality of the silk produced, and the greater quantity of reeled silk yielded by the same number of cocoons of similar description.

3. These certainly are very great advantages, and in the opinion of the Vice-President in Council fully bear out the recommendation of the Board, that the pottery ghyes should be generally introduced.

4. The great gain from the substitution of these ghyes for the old basins and stoves, will arise from the saving of seventy per cent. of fuel. But this saving is nearly the same as was secured by the previous invention of Captain Somerville, who first proposed so adapting the fire, as that the flame and heated air should go round the basin before escaping up the flue or chimney. Mr. Shakespear, however, has greatly improved on Captain Somerville's plan of fire-place; first, by getting rid of the iron door, which added considerably to the expense of its erection; secondly, by an improved construction within, renewable with less trouble and expense; and lastly, by the substitution of common pottery basins for the copper ones of Captain Somerville, which were very costly, and as appears from the result of these experiments, are injurious to the colour and

quality of the silk. The Board appear, for the above reasons, to have justly decided in favour of the pottery ghyes as compared with those of Captain Somerville, who has the merit, however, of having first pointed out to Government the method of economising fuel, which is common to both.

5. With respect to Mr. Becher's quadruple ghyes, the same economy of fuel appears to be produced in them as in Captain Somerville's and Mr. C. Shakespear's stoves, by making one fire suffice for the basin of four spinners; and the Board have but done justice to Mr. Becher, in pointing out the great merit possessed by this plan, in consequence of its enabling the Government to have at least twice the same work produced within the same dimension of filature. But the objections pointed out in the inferior quality of the silk produced and in the less quantity yielded from the same cocoons, and the longer time taken in executing the work (in consequence of the use of double reels occasioning a stoppage in both skeins when one thread breaks or gets twisted), are justly deemed by the Board insuperable; and when added to the fact, that the erection of the quadruple basins, owing to their being of copper, is considerably more expensive than the pottery ghyes, the reasons for preferring the latter as the model ghye for general use, are quite conclusive. The reel of Captain Somerville appears to be the best, and that also should

should be generally introduced, so far as may be practicable.

6. The Vice-President in Council therefore adopts the recommendation of the Board, that Mr. Shakespear's pottery ghye shall be the standard one to be substituted on all occasions of renewing basins for those now in use, and where the Board think this can be done with advantage, to be constructed immediately, in place of those now used and in work.

7. The Board will be pleased to issue the requisite instructions to the Commercial Residents for the gradual or immediate adoption of the improved stove and basin, and the Military Board will be informed of the final determination of Government on this subject, in order that the Executive Officers and the Superintending Engineers may place themselves in communication with Mr. C. Shakespear, and be prepared to erect generally ghyes of his construction, wherever the Board of Trade may direct.

No. 5.

EXTRACT LETTER *from the Court of Directors to the Governor-general in Council, Bengal, dated the 11th September* 1833.

The two specimens of raw-silk which were spun at the Experimental Filature at Howrah, at the quadruple basins of Mr. Becher, and at the pottery ghyes of Mr. Shakespear, adverted to in your letter of 30th October 1832, have been shewn to persons best qualified to judge of their respective merits, it being explained to them that both were wound from the same cocoons, and which were of an unfavourable bund. Copy of their report is sent in the packet, from which it appears that the difference in quality is not very great, but that the produce of the pottery ghyes has the advantage as to value, in this market; from which, and from the great saving of expense in their construction, it may be expected that much benefit will be derived from their more general use in Bengal.

No. 6.

MINUTE *of the Bengal Board of Trade, 10th October* 1833, *and Secretary's Report.*

The Secretary lays before the Board the following Report, submitted by the late Secretary, of the operations

operations which were carried forward at the Howrah experimental filature, during the period that its affairs were under his supervision.

Note by the Secretary.

It may be satisfactory to the Board to be furnished with a succinct report, explanatory of the operations which have been carried forward at the Howrah experimental silk filature, during the period that its affairs have been under my general supervision.

The chief objects contemplated by the erection of these works were: first, to lessen the charges incident to the manufacturing process; and secondly, to effect improvement in the quality of the article produced.

The simultaneous accomplishment of these views in a newly formed establishment was hardly to have been anticipated; yet it may truly be affirmed, that some progress has already been made towards the partial attainment of each of those separate objects for which the experiments were originally undertaken.

Where the main endeavour is directed to the preparation of an article on the most approved principles, a deviation from the rule of strict economy must necessarily be admitted. If, on the other hand, the chief design be to effect a diminution of cost, it becomes requisite to forego the use of all those expedients which, though conducing to

to improvement in manufacture, are yet attended with increased expenditure.

In the note which I had the honour of submitting, under date of 10th May last, it was observed, that the manufacturing charges had been brought down as low as 1 rupee 2 annas per seer of silk. On subsequent trials those charges were still further reduced to 15 annas per seer. The general average cost of manufacture throughout the different bunds would appear to be about 1 rupee 8 annas, taking every description of ghye indiscriminately.

The annexed statement, marked A, exhibits the cost of the manufacturing process at Howrah, compared with the charges incurred at Cattorah, a factory subordinate to the Hurripaul Residency, and which has been selected for the purposes of contrast, owing to its proximity to the Presidency.

In the paper marked B, every item of manufacturing charge incurred at each filature will be found separately and specifically distinguished. The result is shewn to be much in favour of Howrah, notwithstanding its contiguity to Calcutta, and the consequent enhanced wages paid thereat to workmen of every description. The spinners, for instance, receive at the rate of 1d. per seer in excess of what is allowed at Cuttorah, and many other descriptions of persons connected with the filature are paid in similar proportions.

The chief saving effected at Howrah is occasioned by diminished expenditure in the article of fuel;

fuel; though a considerable reduction will also be found to have been made in the items under the head of petty and cocoonery charges.

Originally the basins and reels used at Howrah were of various kinds, but under the Board's recent instructions, they have all been converted into the Shakespearian pottery plan, with exception of Mr. Becher's quad and double basins, which remain unaltered.

The cocoons hitherto worked off have been obtained exclusively from the Hurripaul and Radnagore aurungs, with exception to a small supply received during the past March bund from the Commercolly district, and which yielded 1 maund 23 seers 12 chittacks of silk.

(A.)

Statement of Manufacturing Charges at the Experimental Filature, contrasted with those incurred at the neighbouring Filature of Cattorah, under the Hurripaul Residency.

Bunds.	Charges of Experimental Filature.			Charges of Cattorah Filature.			Savings at Experimental Filature.		
	Rs.	As.	P.	Rs.	As.	P.	Rs.	As.	P.
1832.									
March, large ...	1	6	$8\frac{1}{3}$	2	8	$5\frac{1}{3}$	1	1	9
March, small April and Rainy	1	5	9	2	11	9	1	6	—
October and November	1	9	7	3	15	$0\frac{1}{3}$	2	5	$5\frac{1}{4}$

(B.)

Statement shewing the difference in the several items of, and at the neighbouring Filature of Cattorah,

Bund.	Spinners.			Reelers.			Water-Carriers.			Fuel.		
	Rs.	As.	P.	Rs.	As.	P.	Rs.	As.	P.	Rs.	As.	P.
March, large, average per seer.												
Howrah.........	0	10	9⅓	0	6	5⅓	0	0	4½	0	4	1⅓
Cattorah	0	9	7¼	0	6	4¼	0	1	1⅓	0	14	0
March, small, April, and Rainy, per seer.												
Howrah.........	0	8	10⅓	0	5	11⅔	0	0	7	0	4	6
Cattorah	0	7	8¼	0	5	3½	0	0	9	0	14	0
October and November, per seer.												
Howrah.........	0	11	1	0	6	3	0	0	8½	0	5	1
Cattorah	0	9	7½	0	6	4¾	0	1	0½	0	14	0

Manufacturing Charge at the Experimental Filature under the Hurripaul Residency, for 1832.

Sweeper.			Sundry Charges.			Petty Repairs.			Rent.			Cocoonery.			Total.		
Rs.	As.	P.	Rs.	As.	P.	Rs.	As.	P.	Rs.	As.	P.	Rs.	As.	P.	Rs.	As.	P.
0	0	$1\frac{1}{3}$	0	0	$7\frac{1}{2}$	0	0	$0\frac{1}{2}$		—		0	0	$2\frac{1}{2}$	1	6	$8\frac{1}{3}$
0	0	$2\frac{1}{2}$	0	2	$7\frac{1}{3}$	0	0	$1\frac{1}{3}$	0	0	4	0	6	$1\frac{1}{3}$	2	8	$5\frac{1}{3}$
0	0	2	0	0	8	0	0	3		—		0	0	9	1	5	9
0	0	$2\frac{1}{3}$	0	3	$0\frac{1}{4}$	0	0	$1\frac{1}{3}$	0	2	4	0	10	$4\frac{1}{3}$	2	11	9
0	0	2	0	1	3	0	0	4		—		0	0	9	1	9	$7\frac{1}{2}$
0	0	$2\frac{3}{4}$	0	6	$8\frac{1}{2}$	0	0	$1\frac{1}{3}$	0	3	$0\frac{1}{2}$	1	5	$10\frac{1}{2}$	3	15	$0\frac{1}{3}$

(M.)

1. Statement of the several Silk Factories in India, the property of the East-India Company, as they stood in March 1832.

2. Statement of the hired Silk Filatures, as they stood in 1832.

3. Abstract Statement of the number of Basins in the Company's and in the hired Filatures, as they stood in 1831-2.

No. 1.

East-India House, June 1833.

STATEMENT *of the several Silk Factories in India, the property of the East-India Company, as they stood in March* 1832.

1. *Bauleah Factory.*

Head Factory, comprising	10	Filatures with	832	Basins.
Burgotchee	4		200	
Soorso	3		176	
Dhoresaw	4		110	
Bhowanygunge	3		100	
Kojah	5		180	
Berampore	2		106	
Madhoymoorea	2		72	
Beraldah	1		100	
Catlamary	not stated		148	
			2,018	

Very little silk was prepared at this factory for the Company's investment, except at the Company's own filatures.

2. *Commercolly Factory.*

Head Factory, comprising	6	Filatures with	988	Basins
Galimpore	2		210	
Munsitpore	3		302	
Meerpore	2		216	
			1,716	

No.

No raw-silk was prepared for the Company at Commerçolly in hired filatures.

3. *Cossimbuzar Factory.*

One Filature with .... 152 Basins

The supply of raw-silk from Cossimbuzar was chiefly drawn from hired filatures and from purchases by contract.

4. *Hurripaul Factory.*

Durhatty, comprising	1	Filature with	252 Basins.
Dhoneecacolly	1	....	76
Phoolishur	1	....	76
Amptah	1	....	150
Cuttorah	1	....	152
Bakra	1	....	60
			766

No hired filatures at Hurripaul of late years, but much raw-silk has been purchased for the Company's investment by contract.

5. *Jungypore Factory.*

Head Factory, comprising	6	Filatures with	593 Basins.
Bunoganea	4	....	330
			923

No silk supplied from hired filatures, or by contracts.

6. *Malda Factory.*

Head Factory, comprising	3	Filatures with	300 Basins.
Tannore	3	....	180
			480

A large

A large supply of raw-silk was prepared for the Company at Malda from hired filatures.

7. *Radnagore Factory.*

Guttaul, comprising 5 Filatures, with	620	Basins.
Connacool	72	
Boorsoot	200	
Gopeygunge	160	
Cossigmah	200	
Putnah	192	
Tumlook	200	
Byrampore	200	
Santipore	200	
Bulludgatta	200	
Jullapore	204	
Debrah	146	
	2,594	

A large part of the Company's raw-silk from Radnagore was from hired filatures.

8. *Rungpore Factory.*

Nabobgunge, comprising Filatures with	514	Basins.
Bograh	350	
Ganidon	152	
Peergunge	284	
	1,300	

The greatest part of the Company's raw-silk from Rungpore has hitherto been supplied from hired filatures, the Company's new filatures not having been yet brought into activity.

9. *Santipore*

9. *Santipore Factory.*

Head Factory, comprising	Filatures with	300	Basins.
Peelee	....	500	
		800	

Much of the Santipore raw-silk was drawn from hired filatures.

10. *Soonamooky Factory.*

Rangamatty, comprising	Filatures with	302	Basins.

The principal supply of raw-silk from Soonamooky was from hired filatures.

11. *Surdah Factory.*

Head Factory, comprising	Filatures with	588	Basins.
Pikeparah	....	100	
Dakrah	....	100	
Sandikhan	....	100	
		888	

Part of the Company's raw-silk from Surdah was provided at hired filatures.

12. *An Experimental Filature,*

Of one-hundred basins, for making comparative trials of the various modes of winding silk, furnaces, basins, reels, and for improving the kinds of silk-worms, &c. was erected in 1832, at Howrah, opposite to Calcutta, to be under the personal direction of the Board of Trade.

No. 2.

STATEMENT *of the Hired Silk Filatures as they stood in* 1832.

1. *Bauleah Factory.*

None.

2. *Commercolly.*

None.

3. *Cossimbuzar.*

Banidosspore...............	148	Basins.
Gopynauthpore	314	
Jumsheerpore	152	
Bhorlay	178	
	792	

Silk is also procured by purchase or contract.

4. *Hurripaul.*

None during the three years ending 1830, but much silk is procured by purchase or contract.

5. *Jungypore.*

None.

6. *Malda.*

6. *Malda.*

Connyshopur	Basins	176
Thackoorparah		48
Dhorul		48
Bhawnpore		80
Futtypore		50
Ramnagore		100
Dowlutpore		60
Govindpara		172
Naum Bassodipara		74
Dhonoorah		40
Elengah		44
Runjunparah		22
Bhonpore and Dungaparah		88
	Basins	1,002

7. *Radnagore.*

Keerpoy	Basins	200

8. *Rungpore.*

Peergunge	Basins	240

9. *Santipore.*

No hired filature. Much silk provided by purchase or contract.

10. *Soonamooky.*

Gonatea, the head Factory,	Basins	1,200
Sattee		150
		1,350

11. *Surdah.*

11. *Surdah.*

Nattore .... Basins 100

N.B. The rent for hired filatures being in most instances four annas per seer, is paid on the quantity of silk which the Company's workmen wind therein.

No. 3.

ABSTRACT STATEMENT *of the number of Basins in the Company's Filatures and in the Hired Filatures, which appear to have stood in the year* 1831-2 *as follows:*

	Company's Basins.	Hired Basins.
1. Bauleah, Company's Basins	2,018	—
2. Commercolly	1,716	—
3. Cossimbuzar	152	—
Hired...........	...	792
4. Hurripaul, Company's	766	—
5. Jungypore	923	—
6. Malda	480	—
Hired...........	...	1,002
7. Radnagore, Company's..................	2,594	—
Hired...........	...	200
8. Rungpore, Company's	1,300	—
Hired...........	...	240
9. Santipore, Company's	800	—
10. Soonamooky, Company's..............	302	—
Hired...........	...	1,350
11. Surdah, Company's	888	—
Hired...........	...	100
12. Experimental Filature at Howrah, Company's	100	—
Total of Company's Basins	12,039	3,684
Total Hired Basins	3,684	
Total of Basins	15,723	

REPORT

OF THE

PROCEEDINGS OF THE EAST-INDIA COMPANY

IN REGARD TO THE

CULTURE AND MANUFACTURE

OF

INDIGO.

REPORT.

Indigo was a prominent article of importation by the East-India Company during the first century of their commerce. The British colonists in the West-Indies and the southern parts of North America, having however given attention to its cultivation and manufacture, at length succeeded in producing considerable quantities of very good quality, and the Company then discontinued their imports.

About the year 1747, most of the planters in Jamaica and other British possessions in the West-Indies relinquished the cultivation, and the Spanish and French colonies (where the best kinds had been made) continuing to export, the British consumption of the finer sorts was chiefly obtained from foreign sources in Europe.

When the British provinces of North America had broken off their connexion with the parent state, and the Company's territories in India had become greatly extended, another change took

place.

place. The Court of Directors made extraordinary efforts to increase the production of indigo and improve its quality, foreseeing that, if they succeeded, the result would be at once highly advantageous to India and beneficial to this country, by ensuring a regular supply of an article essentially necessary to some of the most important British manufactures.

Influenced by these views, the Court, in 1779-80, entered into contract with a gentleman in Bengal, who was engaged in the cultivation, for a supply at prices which were intended to encourage the growth. Other engagements of the same kind were successively made until the year 1788.*

At that period the Court, taking a review of what had been done, found that very heavy losses had accrued under the existing system, but that the indigo produced had arrived at a considerable degree of perfection. The result of the inquiry was, a determination that the Company should cease to purchase for at least three years, and that the trade should be laid open to their servants and other persons under their protection, upon payment of freight, Company's duties, and charges.

* Letter to Bengal, 28th March 1788.

charges. This, it was hoped, would create competition, and operate towards bringing the article to as high a state of improvement as possible, at the same time that it would effect a reduction in the cost of manufacture. It was thought that it might likewise afford the Company's servants a mode of remitting their fortunes to Europe, which would be legal, advantageous, and adequate.

As a further aid to this rising trade, the Company made large advances of money, secured on the indigo, on a plan of remittance to London,* and this course was followed for many years.

In 1806 the Court saw fit to order that their commerce in indigo should be resumed in the following year, by ready-money purchases to the amount of three lacs, and open to provisional extension in that season; and with some intermissions the Company continued to purchase, either in the same mode or by contract, for exportation to London, to a greater or less amount, until a short time before the expiration of the late charter.

As the Company did not, at any period, engage directly in the cultivation and manufacture of indigo, their records do not afford documents similar

* Letter to Bengal, 27th July 1796.

similar to those which are found on the subject of Raw-silk and Cotton-wool. No particulars of the processes followed at the private factories throughout the widely extended indigo districts have been received by the Court. In the early stages of the manufacture under European direction, the Court procured the best information which could then be obtained, and transmitted it, with approved samples and reports, to assist the planters in their attempts to rival the superior produce of the Americas. This was all that was contemplated; but happily more has been achieved. India, for many years past, has produced indigo of quality surpassing that of any other country, and has long been the chief source of supply to the rest of the world.

The following papers shew the principal measures pursued by the Court in furtherance of this important result, from the commencement of the improvement in the production of indigo, until a high degree of success was attained, and the manufacture became firmly established.

LIST OF PAPERS

IN THE

COLLECTION.

No.					Page
1.	Extract Letter from the Court of Directors to the Governor General in Council of Bengal, 11th April 1785				3
2.	Ditto	ditto	..	12th April 1786 ..	5
3.	Ditto	ditto	..	27th March 1787 ..	6
4.	Ditto.	ditto	..	28th March 1788 ..	7
5.	Ditto	ditto	..	8th April 1789 ..	12
	With Letter from William Fawkener, Esq., Secretary to the Lords of the Privy Council, 6th Feb. 1789				13
	And Remarks on some specimens of Indigo, by Mr. Charles Taylor of Manchester, 1789				14
6.	Extract Letter from the Court of Directors to the Governor-general in Council of Bengal, 6th May 1791 ..				21
7.	Ditto	ditto	..	30th May 1792 ..	24
	Account of the quantities of Indigo imported into Great Britain during the years 1782 to 1791 inclusive, distinguishing the countries from whence imported, and each year				26
8.	Extract Letter from the Court of Directors to the Governor-general in Council, Bengal, 25th June 1793 ..				31
9.	Ditto	ditto	..	3d July 1795 ..	34
10.	*Ditto*	*ditto*	..	*3d February 1796* ..	35
11.	Ditto	ditto	..	27th July 1796 ..	37
12.	Ditto	ditto	..	28th August 1800 ..	44
13.	*Ditto*	*ditto*	..	*8th September 1802* ..	59

Account

No.				Page
14.	Account of Advances on the Remittance Plan, 1786-7 to 1803-4			60
15.	Extract Letter from the Court of Directors to the Governor-general in Council of Bengal, 31st August 1804			61
16.	Ditto	ditto	31st August 1804	62
17.	Ditto	ditto	30th July 1806	63
18.	Ditto	ditto	30th March 1810	65
19.	Ditto	ditto	6th June 1810	67
20.	Ditto	ditto	20th June 1810	72
21.	Ditto	ditto	10th April 1811	73
22.	Account of Indigo exported from Calcutta			76
23.	Extract Letter from the Court of Directors to the Governor-general in Council, Bengal, 7th June 1826			78
24.	An Account of Indigo sold at the East-India House, with the average prices, in the years 1790 to 1806			80
25.	Extract Letter from the Court of Directors to the Governor in Council of Madras, 6th May 1791			91
26.	Ditto	ditto	30th May 1792	92
27.	Ditto	ditto	8th July 1795	93
28.	Ditto	ditto	2d March 1798	93
29.	Ditto	ditto	7th April 1807	94
30.	Ditto	ditto	7th September 1808	94
31.	Extract Letter from the Governor in Council at Madras, to Court of Directors, 3d March 1809			95
32.	Ditto	ditto	6th December 1811	96
33.	Extract Letter from the Court of Directors to the Governor in Council of Bombay, 19th February 1794			96

PAPERS

RELATING TO

THE CULTURE AND MANUFACTURE

OF

INDIGO.

No. 1.

EXTRACT LETTER *from the Court of Directors to the Governor-general in Council, Bengal, dated the* 11*th April* 1785.

Par. 49. In respect to indigo in general, we are of opinion, if proper care is taken in the purchases, in its price and quality, it might become a beneficial article of our commerce. Hitherto it seems only to have engaged your attention in a view as a manner of remittance. In this, however, it has failed considerably, owing to the high prices at which it has been purchased.

50. It is our wish to encourage an increase of this article to as great an extent as possible, whenever, from its improved quality and reduced price, you shall judge there is a fair and reasonable prospect of its yielding a suitable profit.

51. Observing that there frequently happens in the same package indigo of very different qualities, we have selected a number of samples of the quality most approved, to which you will not fail to pay the strictest attention.

72. We are confident that, with care in selecting the qualities which will suit this country, it might, as we have before observed, prove beneficial, as the article is generally esteemed, and will be more so as it becomes more known, being of a

strong good quality. At present there is a prejudice against it for its shape and appearance, which we conceive might easily be remedied, by making it in square cakes of about one and a-half inch or two inches, like the samples No. 2, which will make it resemble and answer every purpose of that which is made by the French at St. Domingo, which is in high estimation. If, in forming or drying the indigo, the sand and dirt which adhere to the outside could be avoided, it would render it more pleasing to the eye and more saleable, as frequent complaints have been made that the sand injures the mills in grinding it.

73. We have, besides the large samples which are numbered, selected a few particular stones, of rich fine copper, marked C, and fine purple, marked P, which are the qualities that will always please and find a ready and good sale. Low qualities we desire may be avoided, as there is annually a great supply of Carolina indigo at low prices, which will answer the same purposes, and which, from the low freight and small expense attending the importation, will always have the advantage over any of the like qualities imported by us.

No. 2.

EXTRACT LETTER *from the Court of Directors to the Governor-general in Council, Bengal, dated the 12th April* 1786.

When we reflect upon the cheapness of labour in Bengal, and the favourable climate it enjoys, we cannot harbour a doubt of the possibility of making indigo a most valuable article of importation; neither can we too strongly inculcate the necessity of your paying the most strict attention to it. We are confident that it might become one of the very best means of remittance to this country, and one of the least prejudicial exports from Bengal. We send you in this packet the opinions of some of the principal brokers in that branch on the parcels last sold. You will naturally conclude from the information we gave you last year, and the present advices, that unless very material alterations in price, and in the quality and shape of their indigo take place, we shall be under the necessity of proscribing the import of that article, notwithstanding our earnest desire to promote the culture of it.

No. 3.

EXTRACT LETTER *from the Court of Directors to the Governor-general in Council, Bengal, dated the 27th March* 1787.

Par. 263. Application having been made to us by Mr. Robert Heaven, for permission to proceed to Bengal to apply himself to the cultivation and improvement of sugar, cotton, and indigo, and being well satisfied with the qualifications of Mr. Heaven, who for thirteen years past has employed his talents in the culture of those valuable articles in the West Indies, we have permitted him to proceed to your Presidency and remain there five years, under the usual covenants and restrictions entered into by persons allowed to proceed to India to practice in the way of their profession; except as to trade, which part he is to be permitted to carry on only in the particular articles of indigo, sugar, and cotton, of his own manufacture, and that in common with every other person engaged in the same pursuits, without being granted any particular or exclusive privileges, that may in any measure tend to a monopoly in those articles.

No. 4.

Extract Letter *from the Court of Directors to the Governor-general in Council, Bengal, dated the 28th March* 1788.

Par. 38. Having taken a review of the issue of our concerns in the article of indigo, from the time 28
of our Board of Trade entering into the first contract for that article with Mr. Prinsep, in the year 1779-80, up to the latest period, we are sorry to remark the very heavy losses that have constantly occurred thereon.

39. It appears from an account we have caused to be made out (a copy of which is transmitted a number in the packet), that the produce of the sales of the several parcels purchased of Mr. Prinsep prior to the year 1786, has yielded a remittance of only 1s. 7d. 67dec. the current rupee, which, reckoning the rupee but at 2s., is a loss in the first instance of upwards of seventeen per cent., independent of freight and charges, which may be reckoned at full ten per cent. more, or equal in the whole to a loss of twenty-seven per cent.

40. Of the quantity contracted for in 1786 with Messrs. Prinsep, Douglas, Udney, Fergusson and Barretto, J. P. Scott, and Henry Scott, we are not able at present fully to state what have been the losses

losses thereon, as only a part has been yet dis-
38. posed of; but at the price at which that part sold, there is no reason to suppose the latter contracts will turn out more favourable than the former ones. Of Mr. Prinsep's deliveries, the parcel per *Phœnix* sold only at an average of 5s. 4d. 62dec., which is a loss on the prime cost and charges of 1s. 0d. 91dec. per pound. Those of Mr. Douglas, per *Berrington*, averaged only at 5s. 1d. 15dec., or a loss of 11d. 44dec. per pound. Those of Messrs. Fergusson and Barretto, per *Earl Talbot*, averaged 3s. 11d. 70dec., or a loss of 2s. 3d. 62dec. per pound. Of those of Mr. J. P. Scott, per *Berrington*, we can make more favourable mention, as the parcel received from him averaged 7s. 5d. per pound, which yielded a profit of 11d. 01dec. per pound.

Notwithstanding, however, the advantages gained by the latter parcel, the losses upon the aggregate of the above parcels have been very considerable, as will appear from an account transmitted herewith, which shews that what stood us in

Cost and charges	£30,207
Produced only	21,596
On which there is a loss of	£8,611

Or equal to twenty-eight per cent.

From a due consideration of these circumstances, we see a necessity for adopting some

ther

other measures concerning this article, than those that have been heretofore pursued.

41. We feel with reluctance, that an article which, considered in a political point of view, has every claim to our attention, as having a tendency to render the Company's possessions in Bengal more valuable, by creating from the soil and labour of the natives an export commerce, capable of being carried to a very great extent, as well as ultimately to benefit this country, in supplying an article so necessary to its manufactures, and for which large sums are annually paid to foreigners, should be wholly abandoned, after the very heavy expenses that have been incurred, in bringing it to the degree of perfection at which it is now arrived; but at the same time we cannot, in justice to the Company's commercial interests, which are equally an object of our concern, acquiesce in the measure of investing any further sums therein, until there is a more flattering prospect of their turning to a more favourable account. To accomplish this, either the article must undergo a very considerable reduction in price, or be materially improved upon as to quality.

42. The prices at which tenders have been made you for the year 1787-8, are by no means such as, we apprehend, are at all likely to answer at this market, unless it shall prove to be of a very superior assortment to our former imports; we have therefore, from a due reflection upon the subject,

subject, come to a resolution, to decline all further
8. concerns in indigo (any engagements you may have entered into with Mr. Boyce, excepted), for the term of three years, to commence from the receipt of these our advices in Bengal, and that one year's notice be given of any future resumption of the same by the Company; during which period we permit of its being sent home, on the account of our servants and all others under our protection, upon payment of freight, Company's duties, and charges, in the same manner as took place respecting the article of raw-silk.

43. We are led to the measure of laying open this branch of trade, in the hopes that it will create among individuals that kind of competition, which will not fail to operate in bringing the article to its greatest possible state of perfection, and as well as to ascertain the lowest rate at which it is possible to be manufactured: in addition to which, we conceive that it will afford the Company's servants a legal, ample, and we hope, advantageous mode of remitting their fortunes to Europe, and, of course, be the means, as far as it shall extend, which we are assured may be to a very considerable amount, of depriving foreigners of those resources which they have been so successful in procuring, for carrying on their commerce, to the great injury of the Company as well as the nation at large.

44. The samples transmitted of the manufacture of Mr. Boyce, having been inspected by a gentleman

man

man on whose judgment we may place a strong reliance, he has delivered a report thereon to the following purport:—

"That the quality of that contained in the white bag, is equal to Spanish, at 9*s*. 6*d*. to 10*s*. 6*d*. the pound the second sort; and that he can aver with propriety, any quantity may be sold at that price. That the making it in shape about an inch square will be a very great recommendation.

"That what is contained in the red bag is a strong copper, and will always find a readier sale than that in the white, there being a greater quantity of it consumed. The price would be about 6*s*. per pound. The shape should be the same, the shippers always preferring a good square.

"The quality required for the different markets is, for

Turkey	Copper.
Russia	Blue.
Sweden and the North	Lean low blue.
Hambro'	Copper bold.
Holland	Middling black copper.

"The blue bag is about the same quality as the red."

45. If any quantity of these assortments are procurable through the medium of Mr. Boyce, either by agency or contract, on terms that are likely to yield us any advantage, you will act therein as you shall judge is the most conducive to our interest.

No. 5.

Extract Letter *from the Court of Directors to the Governor-general in Council, Bengal, dated the 8th April* 1789.

Par. 63. Having, for the reasons we have stated
9. in our letter of the 28th March 1788, directed the trade in this article to be laid open to individuals for the term of three years, we have only here to add, that such of your late purchases of that article as have hitherto come to sale, have not turned to more favourable account than those which preceded them, as will appear from the accounts which accompany this letter.

64. We are in hopes, the measure of laying open this trade will be attended with the good effects expected to result therefrom, and that hereafter it may become a permanent and advantageous article of commercial remittance, as well to the benefit of Bengal as of this country. In order to effect every possible improvement in the article, we transmit you herewith copy of a letter from William Fawkener, Esq., Secretary to the Lords' Committee of the Privy Council for Trade, giving cover to a report of some experiments that have been made therewith by a manufacturer of this country, with some hints necessary to be attended to in the management and preparation of the

same.

same. As it is probable the information therein contained may be useful to the gentlemen concerned in indigo plantations, we direct that the same be made known, in a manner that shall be most likely for rendering them publicly useful.

Office of Committee of Privy Council for Trade, Whitehall, the 6th February 1789.

SIR:

I am directed by the Lords of the Committee of Privy Council for Trade to transmit to you the enclosed specimens of East-India indigo, together with a letter to Mr. Chalmers from Mr. Taylor of Manchester, containing an account of experiments made thereon, and information respecting the mode of preparing and managing indigo, which I am to desire you will please to communicate to the Court of Directors; and I am further to recommend to the Court of Directors, on the part of their Lordships, to continue to encourage the growth and manufacture of indigo in their settlements in the East-Indies, as it appears that it may be made of equal quality with the finest Guatimala indigo, and may in time afford such a supply to this country, as may render any importation thereof from foreign countries unnecessary.

I am, Sir,

Your most obedient humble servant,

(Signed) W. FAWKENER.

Chairman of the East-India Company.

To George Chalmers, Esq.

REMARKS *on some Specimens of East-India Indigo.*

The indigo I received from you was contained in three papers, one of which was marked "Lt. Rogers," the others "No. 1 & 2 Flora." Though the quantity of the whole was small, I have returned you a little of each in the original papers, that you may occasionally recur to them in the following experiments.

In consequence of not having a sufficient quantity to admit of a great variety of separate trials upon each specimen, and that too great a dependence might not be placed on my own opinion, I consulted a merchant who sells large quantities of indigo, also another person who is an eminent dyer, that we might ascertain the comparative value of the samples you sent, by the usual means of the sight, weight, trial by the nail, and other methods which I cannot easily explain to you by letter, but of which any of the London brokers will inform you.

Mr. John Kenyon, of Lawrence Pountney Lane is in this line of business; he is very intelligent If you make use of my name to him he will readily assist you.

Lieutenant Rogers' samples appearing to consist of two different kinds, I separated them, and marked

marked one A, the other B. No. 1 Flora I marked by "E," No. 2 Flora by the letter "D."

As you intimated by your letter a desire that these samples might be compared with Guatimala indigo, I made the following experiment on each of these four samples separately for that purpose. Having reduced to a fine powder some of the indigos A, B, C, D, and also some fine Guatimala indigo, I dissolved a certain portion of each separately in wine glasses, in equal quantities of concentrated vitriolic acid. I stirred them with glass tubes during the solution, and when perfectly digested, I added to each an equal quantity of clear spring water. All these solutions thus diluted were full bright blue colours.

This experiment, I think, fully indicates, that the fecula, or colouring matter of these East-India indigos, is of the same nature, and probably produced from the same species of plant as the Guatimala; the Carolina and West-India indigos usually affording only brownish green colours by digestion in vitriolic acid.

The vitriolic solutions of the indigos A, B, C, and D, being not distinguishable in brightness of colour, and there not being a sufficient quantity of each to allow me to dye with them separately, I mixed these four solutions together, and by adding thereto different proporions of water, &c. I dyed therein the velveret patterns marked Nos. 1, 2,

3; and

3; and by comparing these patterns with others dyed with fine Spanish indigo, the colour of those done with East-India indigo appeared equally clear and brilliant.

The colours dyed in this manner are not durable on cotton; but, in consequence of the brightness of the colour, are much in demand, particularly upon woollen goods.

Having reserved small portions in dry powder of the East-India indigos, A, B, C, and D, I mixed them together, in order to afford me a sufficient quantity to form with water, lime, &c. the preparation called by dyers a "blue vat," and which gives a permanent colour to cotton dipped therein.

To form and manage this liquor perfectly, is perhaps the most difficult branch in the dyeing business, and seldom succeeds in small experiments. To prepare this dye, vessels containing upwards of four hundred gallons are generally used, contrived in such a manner as to prevent the cotton from touching the dregs at the bottom of the vessel, which would otherwise impair the beauty of the colour.

Judge, then, of the difficulty I had to dye in a half-pint glass, the patterns I send you marked Nos. 4, 5, 6. I wish you, therefore, to consider these patterns as calculated only to shew the durability and intensity of the colour of the East-India

India indigos, the brightness thereof having been exemplified in the patterns No. 1, 2, 3.

I took the indigo liquor remaining from the last experiment, and prepared therewith the liquid used by the calico-printers, called "pencil blue."

I formed with it the blue spots on the printed velveret patterns Nos. 7, 8, and 9. You will find this colour both bright and durable.

From the circumstances I have related, I am induced to believe that the colouring matter of your four specimens of indigo is of very good and similar quality; but they differ in value, from accidental circumstances or mismanagement in their formation. I suppose the East-India indigo A to be worth 11s. per lb., and equal to any Spanish flora or Guatemala; that marked B is only worth 5s. 6d., C 8s. 6d., and D 6s. 9d. per pound.

Thus far have I confined my remarks to the samples you have sent me. It would lead me too far into the subject, if I was to mention to you many experiments I have made on East-India indigo procured from other persons. The result of all of them confirms me in opinion, that the East-Indies can furnish every kind of indigo wanted in Great Britain.

In one pound of East-India indigo taken promiscuously out of a large package, and which I

afterwards

afterwards carefully examined, there appeared to be the following different qualities:

			s.	d.	
3½ oz.	Flora	worth	10	0	per lb.
1½ „	Strong Copper	„	8	9	„
7 „	Middling ditto	„	8	3	„
3½ „	Inferior ditto	„	7	6	„
½ „	White streaked or drossy	„	6	0	„

As it may be an object with you to know how the East-India indigos may be prepared to the best advantage, I will give you the outlines of the usual methods of making indigo, and some hints for improving the process, which I will notice under the terms of fermentation, precipitation, and manner of drying.

1st. The fermentation is begun by steeping the leaves and stalks of the indigo-plant in a large vessel, adding water thereunto, and suffering the whole to ferment, until the colour is separated from the leaves of the plant, and diffused in a full dark green colour through the whole mass of liquid in the vessel.

2d. When properly fermented, the coloured liquid is drawn off into another reservoir underneath, and agitated by buckets or levers for a long time, until the coloured liquor granulates, and precipitates (by subsiding for some time) the indigo to the bottom of the reservoir.

3dly. The useless yellowish brown coloured liquor which covers the precipitate is suffered to run

run away. The blue precipitate is put into linen bags and drained from the superfluous moisture, then taken out and placed in shallow wood cases to dry, and afterwards cut in small squares, and when perfectly dry packed in casks, boxes, or skins, for sale.

As an intelligent overseer is always necessary to direct an indigo manufactory, the use of a thermometer in the first process would enable him to judge accurately of the state of the fermentation, save him much trouble and anxiety, and prevent the loss which frequently happens, from the indigo liquor turning putrid and useless by being suffered to overheat during the fermentation, through want of a certain method to determine its heat.

The use of the violent agitation in the second process, I think, has never been clearly ascertained in any account I have seen respecting indigo. Its theory certainly depends upon the great attraction which indigo in that state of solution has for fixed air. By agitation and exposure to the atmosphere, it absorbs it from common air, unites with it, and is thereby precipitated. The success of this part of the business, therefore, will be increased by such improvements in mechanics, as will expose the coloured liquor with the largest possible surface to the atmosphere, that the affinity may sooner take place, and in procuring a great circulation of common air, in and about the reservoir.

In the 3d part of the process it is necessary that the moist indigo should be dried slowly, perfectly, and with a regular degree of heat: it should also remain some time exposed to the air before packed in close vessels or casks. If dried hastily, it occasions the white veins frequently found in indigo, similar to those in the sample B; it also brings on a violent fermentation (like to that of hay newly stacked), which sometimes entirely destroys the quality of the indigo. Great care should be taken that the indigo is dried upon clean wood cases, free from sand or earth. Through carelessness in the preparation of East-India indigo, sand is frequently mixed therewith, and greatly reduces its value.

For the perfection of this article and sundry others which India could furnish, upon terms which would render the connection betwixt her and Great Britain mutually and truly serviceable, some political alterations would be necessary in India. I think I gave you some hints on this subject, when I had the honour to attend the Lords of the Privy Council as a delegate from the English Calico and Muslin Manufacturers.

Though not concerned myself in the manufacture of the articles of which that delegation was the object, yet I espoused the cause, from an opinion that both Great Britain and India would benefit from a candid investigation of it. From the same principle, I still regret that the Directors

of India and the British manufacturers regard each other with a jealousy prejudicial to the welfare of both countries, and eventually destructive to the real interest of both parties.

I am with much esteem, Sir,
Your obedient humble servant,
(Signed) CHARLES TAYLOR.

Manchester,
31st January 1789.

No. 6.

EXTRACT LETTER *from the Court of Directors to the Governor-general in Council, Bengal, dated the 6th May* 1791.

Par. 36. The measures you have taken for affording encouragement to the cultivation and manufacture of indigo, meet our entire approbation, and we trust, from the favourable prices that have obtained at our late sales (the particulars of which will appear from the accounts herewith transmitted), the planters will find their account therein. It is with satisfaction we learn that the article, owing to its improved quality, continues rising in the esteem of the several descriptions of the consumers, and that there is a prospect of a considerable export to the foreign markets. The success apparently resulting from the present mode of conducting the trade, is sufficient to induce us to acquiesce in its continuance until the article

article becomes more effectually established; in which case it may hereafter be a matter of consideration, what other system shall be resorted to, for securing to the Company, without losing sight of the interest of the manufacturer, the advantages that would accrue from carrying on the trade on their own immediate account.

37. We have attended to the representations made by the indigo manufacturers, as stated in paragraphs 10 to 14 of your letter in this department of the 7th December 1789, and, for the reasons you have therein set forth, approve of your consenting to remit the Calcutta duty for the seasons of 1789 and 1790, ending with the despatch of the last ship (10th March 1791). We have also, upon all such parcels as are shipped in those two seasons, consented to a further remission of two and a-half of the five per cent. levied at home, under the usual name of the Company's duty. In respect to the several other points of reference, as they involve expenses to which the Company themselves are subject, a compliance therewith is impracticable; nor do we think, after the expiration of the periods above-mentioned, the article will stand in need of the assistance now afforded.

38. As it is probable it may be of use to you to be informed of the general extent of the trade carried on in indigo from the different places of its growth, we subjoin the following account.

Quantities

Quantities of indigo imported into England in the year 1789 from the undermentioned places.

Spain	318,782	lbs.
Portugal	96,647	„
America	846,414	„
East-Indies	371,469	„
Ostend *	240,339	„
Other parts	79,906	„
	1,953,557	

39. Upon the above statement, which is considered as a good average, yet it must be remarked, that for the sake of avoiding trouble and accumulated expense at the Custom-house in making post entries, the merchants are in the habit of making their prime entries larger than the real quantities, which is of no moment, no duty being payable thereon. The above therefore may be nearer the truth if rated at 1,700,000 lbs. It is supposed one million of pounds is consumed in this country, and the remaining seven hundred thousand exported; of which export, that from the East-Indies' bears *more than its due proportion.*

40. If the shape of the article was more attended to, it would add to its estimation. The pieces should be about one and a-half to one and three-quarter inches square, to resemble the French. But if those manufacturers who are in the habit of making it in other shapes will but attend to the quality, that will more than counter-balance any defect

* Chiefly East-Indies.

defect in shape; though, where the qualities may be equal, the square will always have the preference in this and every other market.

No. 7.

EXTRACT LETTER *from the Court of Directors to the Governor-general in Council, Bengal, dated the 30th May* 1792.

Par. 192. Your consignments of indigo by the ships of last season being so considerably short of the quantity we had judged from your previous arrangements we might reasonably expect, has proved to us rather a serious disappointment; but as the causes which led to this failure appear to have been altogether out of the reach of control, and as throughout your proceedings in releasing the contractors from their engagements, we notice you have been studiously attentive that the indulgences granted should be suited to the exigency of the case, without sacrificing our interest or endangering our property, we cannot but express ourselves perfectly satisfied with the measures you have adopted.

120. You will receive, a number in the packet, the account of sales of each respective consignment, so far as they have hitherto been made up; and we trust the prices will be found such as to answer the contractor's expectations, as also in some degree to compensate for the unfavourable circumstances they have had to contend against.

121. It

121. It affords us much pleasure to remark that the article, as to quality, is still increasing in reputation. It has already surpassed the American and French, and there is no doubt but by perseverance and attention on the part of the planters, it will effectually rival the Spanish. A parcel of five chests, per *Prince William Henry*, belonging to Messrs. Gilchrist and Charters, was declared to be superior to Spanish, and sold at a higher rate. The buyers deemed it to be possessed of every requisite that could be wished. The twenty-one chests by the same ship, belonging to Mr. Gervais Robinson, were also of a quality nearly equal. It will no doubt be highly flattering to those gentlemen, to learn that their manufactures have obtained so decided a preference. Messrs. Perreau and Stephenson's, and Mr. William Orby Hunter's parcels, have also been well spoken of; nor are the others without a proportionate degree of merit. The prices denote, as we have before remarked, a general improvement: we have selected these parcels, therefore, only with a view to excite an emulation in the planters, and to engage them in the laudable contention of who shall best succeed in bringing the article to its greatest possible degree of perfection.

122. We have been able to obtain from the Custom-house books, an account of the quantities of indigo imported into this country, and from what parts, for the last ten years, which is as follows:—

An Account of the quantities of Indigo imported into the Countries from whence

Countries.	1782.	1783.	1784.
	lbs.	lbs.	lbs.
Denmark	—	112	—
Russia	—	—	—
Sweden	—	—	—
East Country	—	—	—
Germany	2,330	10,000	100
Holland	—	117,235	16,130
Flanders Austrian	78,070	83,955	10,270
France	—	91,980	157,627
Portugal	27,308	21,411	33,148
Italy	—	—	—
Streights	—	—	—
Turkey	—	—	—
Ireland	6,373	883	2,256
Islands—Guernsey, Jersey, and Man	1,120	1,975	4,000
States of America	161,216	518,980	701,938
West Indies	64,309	204,645	54,583
British Continental Colonies	128,640	90,000	21,150
Africa	—	—	—
Asia	25,535	93,047	237,230
Spain	200	50,340	257,947
Total	495,101	1,284,563	1,496,379

Inspector-General's Office,
Custom House, London,
1st March 1792.

Great Britain, during the last ten years, distinguishing imported, and each Year.

1785.	1786.	1787.	1788.	1789.	1790.	1791.*
lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.
—	—	—	—	—	—	—
—	—	—	—	—	—	—
—	—	400	—	336	—	—
—	—	—	—	—	—	—
3,039	3,624	15,870	1,793	7,962	15,000	2,797
1,027	7,296	6,340	4,300	4,276	57,258	8,472
11,851	3,800	3,000	2,400	240,339	19,420	1,752
40,691	11,452	17,231	18,764	60,748	51,222	104,953
79,258	123,796	167,662	81,808	96,647	50,892	95,428
8,000	900	—	—	1,158	65	3,125
—	—	—	—	—	—	—
—	—	—	—	—	—	—
1,556	1,567	2,500	300	5,131	2,108	4,006
—	—	—	40	—	—	—
678,911	765,241	941,927	1,060,164	528,194	626,042	588,805
301,761	86,845	39,872	94,550	35,597	126,220	38,406
16,580	55,012	22,839	5,640	—	5,610	462
—	—	—	—	300	—	—
154,291	253,345	363,046	624,691	371,469	531,619	cannot be given
398,100	666,979	300,643	204,461	319,066	355,859	287,389
1,695,065	1,979,857	1,880,330	2,096,911	1,671,218	1,840,815	1,135,595

(Signed) THOMAS IRVING,
Inspector-general.

* N.B. This last year does not include the East-Indies.

Letter to Bengal, 30 May 1792.

Indigo exported from Great Britain.

1783	263,979 lbs.
1784	293,731 „
1785	605,304 „
1786	542,454 „
1787	559,933 „
1788	508,209 „
1789	744,601 „
1790	861,908 „

123. From a perusal of this account, you will no doubt participate with us in the pleasure of remarking, that in proportion as the imports from Bengal have increased, there has been a diminution from other parts. The consumption of the French indigo in this country is in a manner entirely supplanted by that from Bengal, the former being chiefly introduced for re-exportation. There is another circumstance also highly favourable to our future prospects in the pursuit of this branch of trade. It appears that at St. Domingo, the place from whence the French principally drew their supplies, the cultivation has for some years past been rapidly on the decline. In the undermentioned periods, the produce from this island is stated to have been as follows:—

1783	1,868,728 lbs.
1784	1,555,142 „
1785	1,546,575 „
1786	1,103,907 „
1787	1,166,177 „
1788	930,016 „
1789	958,626 „

124. Thus

124. Thus in the course of seven years only, the article appears to have fallen off nearly in the proportion of one-half. Letter to Bengal, 30 May 1792.

In our endeavours to trace the cause of this reduction, we have been given to understand that the planters have been gradually relinquishing the article in favour of coffee, which they find to answer much better.

By an account published in France in 1770, it was said that St. Domingo at that time yielded

Of Coffee	5,000,000 lbs.
And of Indigo	2,000,000 „

In 1789 the produce of coffee had increased to upwards of seventy-six millions; while that of indigo had decreased to under one million.

125. The late devastations which have overspread the island, will doubtless give a very severe check to this, as well as every other of its productions; and as the planters discovered a disposition to reduce the culture previous thereto, it is probable that it may be finally abandoned.

At all events, a considerable time must unavoidably elapse before the island can be brought to its former state. This will create a further opening for the introduction of the indigo of the East into the various markets on the Continent, that have hitherto been supplied by the French, and will, no doubt, stimulate the planters to make every exertion for securing to themselves, the Company, and

Letter to Bengal; 30 May 1792.

and the British nation, the advantage that must necessarily result from an extension of this useful and important branch of commerce.

126. To the account of the quantities imported is added the exports for the like period, which are also upon the increase. Of the quantities exported, we are not able to specify the places from whence imported, but we are given to understand from persons well informed on the subject, that the East-India bears more than its due proportion.

127. In order to facilitate in future the making up the accounts of indigo, it will be necessary to transmit regularly the quantities supplied under each contract, specifying the ships on which it was exported, the amount in current rupees for which each contractor is responsible to the Company; likewise if each particular engagement is finally closed at the time of sending the said accounts, if not, what further quantities may be expected, or advances made, particularly to notice if any alteration has been made in the original contracts, and such other information as may be of service in expediting the said business.

No. 8.

EXTRACT LETTER *from the Court of Directors to the Governor-general in Council, Bengal, dated the 25th June* 1793.

Par. 107. Referring to our letter of the 30th May last, in which we entered fully into the state of the trade in this article, we have at present only to add, that nothing has since arisen to occasion any alteration in the sentiments and opinions therein expressed. Letter to Bengal, 25 June 1793.

108. We enclose, a number in the packet F, the amount sales of each contractor's supplies, so far as the same are at present capable of being made up. The prices, you will perceive, continue flattering; and while due attention is paid to quality, we are not apprehensive they will undergo any very considerable variation.

109. We have perused with much attention the proceedings of the Board of Trade, as referred to our notice in paragraphs 14 to 23 of your letter of the 25th January 1792, representing the situation of the persons concerned in the culture and manufacture of the commodity, and the policy of affording them every reasonable degree of encouragement, as an inducement to persevere in their undertakings.

110. Upon our advices of the last season coming to hand, you will have noticed that we in a great measure

Letter to Bengal, 25 June 1793.

measure anticipate the Board's recommendations in the relief then afforded, both as to tonnage and freight, and from these aids, combined with the present prices, we are much inclined to think the article cannot fail of rendering a productive account; but as our Board of Trade, in whose zeal and integrity in the management of our commercial concerns we place the strongest reliance, must, from their situation and local knowledge, be more competent to form a correct judgment in this respect than ourselves, we have resolved to invest them with a discretionary power of yielding a still further indulgence, should they see it needful, by consenting that from the sale amount of all indigo manufactured with Company's advances, under the system that has lately prevailed, the whole of the five per cent. Company's duty be remitted, and that in all subsequent engagements that shall be made while the above-mentioned system shall exist, there shall be a deduction only of freight at the rate of 15*l*. per ton of twenty hundred or by measurement, as the owners may elect, and two per cent. as a commutation for the various charges to which we are subject, which, when the nature of them are considered, such as hoyage, wharfage, warehouse-room, labour, printing of catalogues, &c., with the addition of one-half per cent. to a broker for assorting, appraising, &c., we are satisfied is not more than equal to an actual reimbursement of our expenditure.

111. We

111. We have limited this remission to the indigo manufactured with funds supplied by the Company, conceiving that a preference is due to this mode of provision, on account of the assistance it affords us in the way of remittance; but as we are, at the same time, desirous of affording encouragement to individuals to extend their consignments of this article upon our ships, our Board of Trade, in the event of their granting the above indulgence, will also make known, that on all indigo of the above description shipped in the privileges of the commanders and officers, instead of the seven per cent. which by the standing engagements between the Company and their commanders and other officers, is payable on goods in their privileges, the Company will charge only five per cent.

Letter to Bengal, 25 June 1793.

112. The observations of our Board of Trade on the advantages that would be likely to result from the manufacture being undertaken by the natives instead of Europeans, are much to the purpose, and we should be highly gratified on seeing it take effect. We think the measure they have suggested, of embarking in a small concern upon the Company's account, may be found useful, in contributing towards so desirable an end, and accordingly approve of its being carried into effect.

113. For the reasons that are assigned, we approve of your not having complied with the request

Letter to Bengal, 25 June 1793.

request of the merchants, to exempt the indigo manufactured at Benares from the zemindarry and manjee duty.

115. The samples of indigo transmitted by Colonel Kyd, which were manufactured by Dr. Scott of Bombay, were of a choice quality, and valued by an eminent broker as follows:

		s.	d.	
No. 1	at	9	6	per lb.
2		9	0	
3		8	6 to 9 0	
4		7	6	
5		9	0	
6		7	0	
7		7	6 to 8 0	

At these prices we cannot but think the article will be found to answer.

No. 9.

EXTRACT LETTER *from the Court of Directors to the Governor-general in Council, Bengal, dated the 3d July* 1795.

Letter to Bengal, 3 July 1795.

Par. 17. We observe by the Board of Trade's minute of the 8th August 1794 (enclosed in your overland letter of the 18th August), that in the appropriation of the funds allotted for the investment of 1795, no provision was made for the supply of indigo upon the system of contract. The

The reasonings of the Board of Trade for giving sugar a preference over this commodity are satisfactory. The advantages derivable to Bengal from its cultivation are nevertheless too important to be lost sight of. The proposition alluded to in that minute, of providing it by contract for six per cent. promissory notes, if made by the Board of Trade, will, we trust, have met your concurrence, or that some other means will have been devised for furnishing the usual supply to this country. We enclose, as usual, the account sales of each contractor's supply.

Letter to Bengal, 3 July 1795.

No. 10.

Extract Letter *from the Court of Directors to the Governor-general in Council, Bengal, dated the 3d February* 1796.

Par. 34. Having perused the very voluminous papers to which you have referred us, on the subject of the Europeans who have lately settled in the zemindarry of Benares as indigo-planters, we approve of your several orders and resolutions relative thereto, as contained in your letters to the Resident of the 7th March and 23d May 1794, and we trust that the late Regulations will effectually tend to remedy those abuses, of which there appeared too much reason to complain.

Letter to Bengal, 3 Feb. 1796.

35. We concur with you in opinion, that though

 it

Letter to Bengal, 3 Feb. 1796.

it might be extremely desirable to promote the cultivation of indigo in this zemindarry, yet the object is of little importance, compared with the ease and happiness of the natives. But although, from motives of policy and in conformity with a *general regulation for the other provinces, the European* speculators in this article at Benares have been very properly laid under restrictions as to the quantity of land they should respectively occupy, the cultivation and manufacture of indigo must be considered as an object of national importance. We were sorry, therefore, to observe, that notwithstanding it would be the means of affording provision for a number of the most indigent and helpless part of the community, as well as beneficial to the country at large, there appeared a general disinclination to forward its cultivation, which led Mr. Duncan at first to doubt whether the ryots could ever be induced to undertake, to any useful extent, this cultivation, which appears to have been unknown to, and unpractised by the general body of Benares husbandmen.

36. We are pleased, however, to find by a letter from Mr. Duncan of the 21st May 1794, entered on your subsequent proceedings of the 26th September, that he has prevailed upon Mehendy Ally Khan so to amend his original proposal for the cultivation of a considerable quantity of land at reduced rates, as to induce the European manufacturers to accept thereof, and that he thinks the plan

plan proposed by the Khan must have an immediate tendency gradually to render the cultivation of indigo by the natives for British subjects, as general as possible throughout the country.

Letter to Bengal, 3 Feb. 1796.

No. 11.

EXTRACT LETTER *from the Court of Directors to the Governor-general in Council, Bengal, dated the 27th July* 1796.

Letter to Bengal, 27 July 1796.

Par. 7. In our letter of the 30th May 1792, we communicated the following particulars of information respecting the article of indigo.

An account of the quantities imported into Great Britain, from 1782 to 1791 inclusive, distinguishing each year, and from what parts.

An account of the quantities exported from thence, from 1783 to 1790 inclusive.

An account of the quantities produced in the island of St. Domingo, from 1783 to 1789 inclusive.

8. We now forward a continuation of the accounts of the imports and exports from Great Britain made up to 1795 inclusive.

9. Upon a reference to these accounts it will be seen, that the imports, which in the ten years preceding 1794 did not, on the average,

Exceed

Letter to Bengal, 27 July 1796.

Exceed in each year	1,833,562 lbs.
In 1794 were extended to	2,829,494
In 1795	4,368,027
Of which latter quantity the consignments from Bengal alone were ..	2,955,862

10. From so considerable a quantity being poured into the market, in addition to the other usual supplies, and of an assortment but little suited to the general demand, full four-fifths of it being of a very low description of quality, the article has experienced a very considerable depression in price. In the packet will be found the account-sales as far as they can be made up, which we are apprehensive will afford but little satisfaction to the parties interested; and we are sorry to observe, there seems no reason to conclude the ensuing sale will have a more favourable issue.

11. During the progress of war, it is evident all data for mercantile speculations must be founded in hazard and uncertainty. The operations of commerce are subject to so many contingent events, and liable to be affected by so many remote causes, that at such a period little can be depended upon as applicable to any permanent arrangements; yet, in looking to future consignments, it may nevertheless be useful to advert to the following points.

12. It appears that, in the undermentioned periods, the quantities imported, exported, and that remained

remained for internal consumption, were as follows: Letter to Bengal, 27 July 1796.

	Imported.	Exported.	Remained for Internal Consumption.
	lbs.	lbs.	lbs.
Upon an average of five years, from 1784 to 1788	1,829,708	501,926	1,327,782
From 1789 to 1793	1,837,416	877,215	960,201
In.... 1794	2,829,494	1,687,588	1,141,906
In.... 1795	4,368,027	1,443,653	2,924,374

13. It is also further observable, that the imports, which from 1789 to 1793 exceeded those of the five preceding years, on an average,

Only, per annum	7,708	lbs.
In 1794 were surpassed by	992,078	,,
And in 1795 ,,	2,530,611	,,

14. That the increase in the exports in the like periods were:

From 1789 to 1793, on the average, per annum	375,289	lbs.
In 1794	810,373	,,
In 1795	566,438	,,

15. That from 1789 to 1793 the quantities for internal consumption fell short of the five preceding years, on an average, in each year, 367,581 lbs.

16. That in 1794 the increase beyond the five preceding years was 181,705 lbs.; and that, estimating the consumption of 1795 to be the same as 1794,

Letter to Bengal, 27 July 1796. 1794, *viz.* 1,141,906 lbs., the quantity remaining on hand, after providing for every demand, is 1,782,468 lbs.

17. From these documents it seems conclusive, that the consumption of this country may be rated, (allowing for the improvements that have been effected in the quality of that produced in Bengal,) one year with another, at one million of pounds weight.

18. That the imports for a series of years past have been so ample, as not only to yield this supply, but to furnish a considerable surplus for exportation to foreign markets.

19. That this surplus, which in the five years preceding 1789

Average per annum	501,926 lbs.
Became increased in the five subsequent years to	877,215 „
And in the two last years to..........	1,565,620 „

20. To investigate with precision the circumstances under which the rapid increase in the last two years has taken place, will require more extensive information than we have now before us, or than probably will be easily acquired. Doubtless, the suspension of the traffic that took place between Bengal and the Continent, as well directly as indirectly, may in some measure have contributed thereto; but as we are without any account of the productions of St. Domingo later than 1789, we are, of course, unable to ascertain in what degree

gree that island may have suffered from the calamities to which it has been since exposed. Indigo was one of its staple articles; and although the culture was rather upon the decline, yet in 1789 it yielded little short of a million of pounds per annum. It is by no means improbable a very considerable quantity, and perhaps even the whole of this, may have failed. How far this conjecture may prove well founded, or if so, whether there is any prospect of the island regaining its former commercial consequence, time only can discover. Admitting, however, the increased demand to be reckoned upon as permanent, it is obvious the consignments from Bengal must, for some period to come, be very considerably abridged. Upon the scale of one million for home consumption, and a million and a half for exportation, it will be seen that one half of this quantum has been annually drawn from America and Spain, and that except any inroads can be made upon these powerful opponents, Bengal can only calculate upon the remaining moiety; and even the chance of this will become very seriously endangered, unless the utmost attention is paid to the quality.

Letter to Bengal, 27 July 1796.

21. A proper assortment of indigo for the general demand should consist of about equal proportions of fine, middling, and ordinary. The fine has hitherto been almost exclusively furnished by Spain, who have always been remarkably attentive as to quality; and it is with regret we perceive, they

Letter to Bengal, 27 July 1796.

they are still extending their concerns, the imports from thence in the last year having exceeded considerably those of former periods.

22. The middling was mostly supplied by the French, in which we have had the satisfaction of seeing them completely supplanted by the productions of Bengal, and the principal part of the ordinary was introduced from America.

23. Of the Bengal imports in the last season, we have ascertained that the quantity provided

With Company's advances was ...	542,841 lbs.
That the consignments of individuals, under the sanction of the late Act of Parliament, amounted to	1,508,187
And that there was laden on the privileges of the commanders and officers of our freighted ships	904,834
Total	2,955,862 lbs.

24. As the two latter quantities, making together 2,413,021 lbs., have evidently been obtained from private resources, it of course follows, that the article is become so firmly and effectually established, as to stand in no need of being further assisted with our funds, unless the culture and manufacture of it could be confined solely within our own possessions. But this, we fear, is altogether impracticable; it is our intention, therefore, seeing that individuals are more than competent to

to the present, and probably equal to any future supply, to leave the article entirely in their hands: unless you shall be of opinion that the adoption of such a measure will be productive of any serious inconveniences not at present foreseen, in which case we leave you a discretional power to act as, in your judgment, shall be considered most for our interest and advantage.

Letter to Bengal, 27 July 1796.

25. We have reason to believe, that much of the inferior indigo now in the market has been manufactured not only in Oude, but in Agra and other provinces of the higher India, no way connected with our interests or government, from whence it has been imported into Bengal and shipped for this country. Our principal view, in the liberal assistance from time to time afforded by us in favour of this commodity, was to promote and extend the culture and manufacture of it within our own immediate possessions. It is the policy of all nations to afford encouragement to their home manufactures, by securing them a preference in the markets over which they have any influence. This is effected, either by an absolute prohibition, or by levying a protecting duty upon the importation of similar articles from foreign parts. At the present moment, we doubt whether it be advisable altogether to shut the door against the introduction of indigo from the upper provinces, lest Bengal and its dependencies might not be found equal to the demand; but we think it incumbent

Letter to Bengal, 27 July 1796. incumbent on us to draw your attention to the propriety of levying such a transit duty on its way through Bengal to this country, as may be the means of giving a decided preference to the productions of our own territories.

26. It affords us much satisfaction to learn, that the natives are entering upon the culture of this article; but we are not without our fears that the present prices may be viewed as discouraging to their efforts. If any reasonable assistance can be afforded to induce their perseverance, we have no objection to its being granted.

No. 12.

EXTRACT LETTER *from the Court of Directors to the Governor-general in Council, Bengal, dated the* 28*th August* 1800.

Letter to Bengal, 28 Aug. 1800. Par. 1. We have long been accustomed to cherish a sanguine hope, that the article of indigo would become one of the grand staples of our Indian territories, and thus constitute a medium of mutual and essential benefit between the sovereign and the dependent state. We have attended therefore to your proceedings referred to in the second paragraph of your letter in the department of Salt, Opium, and Customs, dated the 16th March 1798, with the interest which this subject inspires; and although we have no advices

advices from you respecting it of any posterior date, we have also deemed it necessary to carry our observations to what has been passing in the indigo trade in the course of the last two or three years.

Letter to Bengal, 28 Aug. 1800.

2. We are sorry to find that, on the whole, a very unfavourable change has manifested itself within that period, in the state both of the indigo manufacture of Bengal and its dependencies, and of those who have been carrying it on; so that the quantity produced has considerably fallen off, and a number of the adventurers in that branch have been reduced to great embarrassment.

3. Considering this subject, in its primary and most important view, as involving the establishment of a great medium of profit and of union between those countries and our own, we have examined into the causes of this decline, and we are induced to trace them in a great measure to the war and its consequences, which have produced a high increase in the expense of procuring money, in the rates of insurance, in the amount of freight, and latterly the imposition of a new duty; whilst, on the other hand, the very same causes have contributed to depress the markets here: and to these adverse occurrences may be added, as we understand, successive bad seasons in India, and the result of a too eager competition between the manufacturers there, those especially of Bengal and of Oude.

Letter to Bengal, 28 Aug. 1800.

4. As, from motives of general policy, we originally encouraged, at a great loss to the Company, the promotion of the indigo manufacture and trade of our provinces, so we never have sought to withdraw our support from it, until that support should be deemed no longer necessary; because we had in view the rational and promising object of securing, finally, for our possession and this country, a very large portion, if not the whole, of the indigo trade of Europe.

5. And therefore, when Lord Cornwallis, in the year 1788, held out a new, though fostering aid of the Company to the wants of the manufacturers, at that period we highly approved of his just and liberal policy, which was productive of the desired effect, whilst it brought to the Company full reimbursement at a good exchange, for the sums they had in consequence of this plan advanced.

6. We think it probable, that the recent disasters in this trade may have engaged your attention. To afford a reasonable aid to the manufacturers upon some such principle as that adopted by Lord Cornwallis, seems to us the most likely way to re-animate their hopes and their exertions. Of course, in resorting to any expedient of this kind, those who have already shewn themselves to be skilful and industrious will be preferred to new speculators, and the security of the Company, which must require a reasonable prospect of ultimate

mate success on the part of the manufacturer, will be duly attended to.

7. Against the effects of war or of unpropitious seasons, it seems out of our power in any other way to provide; but in respect to such disadvantages as arise from the conduct of the trade, something may be done by political regulation. We are aware of the delicacy of attempts of this nature, and desirous that all the subjects, both of our own territories and of those under our influence, should experience the benefits of our protection: we are sensible, also, that the practical errors of trade generally discover themselves soon, and contribute to produce at length a proper level. But in the progress to this point, ruinous losses may sometimes be experienced, and the success of infant manufactures be materially endangered or retarded, to the disadvantage, not of individuals only, but of the community: and here it is that we conceive a vigilant and enlightened administration regarding the good of the whole, may sometimes beneficially interpose to counteract the tendencies of the blind eagerness of individuals.

8. To secure the object of making our Indian possessions, which are pre-eminent in fertility of soil and cheapness of labour, the great source of indigo for European consumption, two things were obviously requisite: that the quality of the article should be such as to obtain a prefer-

ence

ence for it in the markets of Europe; and that the rivalship it would, if of proper quality, soon create in them, should advance so gradually, as not to produce a sudden redundancy, which must occasion a stagnation in the sales and a diminution of price, to the hazard of checking or oversetting the unestablished adventurers in the new commodity.

9. This inconvenience, with its attendant evils, has, we are informed, actually occurred.

10. On the revival of the indigo trade from India, the specimens brought to this market, which were chiefly, we believe, the produce of Oude manufactured in the manner of the natives, occasioned little alarm here or encouragement abroad; but when, not many years after, European skill and energy had furnished from Bengal considerable quantities of a superior kind of indigo, the prejudices at first entertained here against the commodity imported from that quarter were removed, and the indigos of America and the West-Indies were in part supplanted. The impulse given by this change to the enterprise of Europeans in the East, produced a fresh and far greater influx of the native-made indigo of the Upper Provinces; the effect of which was, not only to overstock the market, but to overstock it with an article generally below the standard of quality which the market required, and in so much greater a proportion inferior to the importations of some preceding years, that East-India indigo began to lose

lose part of that estimation, upon which its current and favourable sale must in a certain degree 28 depend.

11. This state of the trade was, in fact, pointed out in our letter of the 27th July 1796. A view was there given of the progressive increase in the importations into this country from all quarters, from the year 1792 to the year 1795 inclusive, which was as follows:

		lbs.		lbs.
1792	from all parts	1,867,554	of which from Asia	501,827
1793	....	1,896,702	....	881,854
1794	....	2,829,494	....	1,364,620
1795	....	4,368,027	....	2,955,862

12. From this view, which exhibits the rapid increase in the proportion of Asiatic indigo to the whole importation, we were led to consider the probable annual demand in this market and the proportions of different qualities suitable for it.

13. The conclusions drawn from the accounts respecting the first of these articles were, that the total of the annual demand might be then taken at 2,600,000 lbs., of which above one million went for the home consumption, the most certain part of the demand; that unless India could reduce the share of the trade possessed by America and Spain, she could only calculate on supplying one-half of the whole demand of this market; and that even the chance of doing this would be very seriously

seriously endangered, unless the utmost attention was paid to the quality.

14. Respecting this second article of the quality, it was found that a proper assortment of indigo for the general supply should consist of one-third fine, one-third middling, and one-third ordinary. Now it is evident from the above statement of indigo imported from 1792 to 1795, that the importations of the latter year left on hand, after providing for every demand, no less a quantity than 1,782,468 lbs.; and as to the quality of the Asiatic indigo, instead of coming in the requisite proportions, the same letter stated "four-fifths of that indigo to be of a very low description of quality," which, from the quotation immediately preceding, may be inferred to have occasioned a preference to other indigoes in the sales of 1795.

15. As supplementary to the information contained in our letter of 27th July 1796, we are now enabled to state from good authority, the imports and exports of indigo into this kingdom in the years 1796 and 1797; which were as follows:

Years.	From different parts of Europe.	From America.	From India.	Total.	Exports.
	lbs.	lbs.	lbs.	lbs.	lbs.
1796	200,076	451,474	3,897,120	4,548,670	1,939,217
1797	38,818	352,149	1,754,233	2,145,200	3,085,728

16. The

16. The view presented by these several particulars strongly illustrates the observations we have 2
laid down in the preceding paragraphs. The imports of 1796 contrasted with the exports, shew how greatly this market was overstocked by the eagerness of competition. The accounts of the following year, 1797, plainly discover, also, the ruinous effects of that competition, combined with other circumstances, in the diminution of the imports from India to less than half the quantity of the preceding year; whilst the trifling quantities received from America and other parts of Europe in 1796, were also further reduced in the next year, by the continued operation of another cause, namely, the progressive ascendency of the Indian indigo in the course of several preceding seasons.

17. At the same time, the exports in 1796 exceeded those in 1795, and the exports of 1797 rose above those of 1796 in an unexampled proportion; whence it is clearly to be inferred, that the Indian indigo has, notwithstanding the difficulties it had to struggle with, obtained a very general preference throughout Europe, because nearly the whole of the exports of 1797 were of that description of indigo.

18. In fact, we have, at the present time, reason to consider London as the emporium of Europe for this commodity; and it is of the utmost consequence to our own manufacturers, as well as the trade of the nation, that it should continue so.

The annual consumption of this article in all Europe during the war, is computed by intelligent persons at about three millions of pounds weight, and we see not why, with good management, our own provinces may not furnish the whole of this demand.

19. The only quarter besides whence indigo now comes in any considerable quantity, is Spanish America, including Florida. Carolina and Georgia, we are told, have nearly abandoned the cultivation of this article, substituting for it cotton, which they soon bring to great perfection. St. Domingo at present raises no indigo; so that, in fact, it is owing to the importations from India during the war, that the manufacturers of this country have not been stopped. But there is a probability that order will be restored in that fine island, and if high prices and short importations of indigo from the East should continue at this market, they may again encourage both North America and St. Domingo to return to the culture of it; the present, therefore, is the time to secure this trade to our own territories.

20. The statements transmitted with our letter of the 27th July 1796 were not before our Board of Trade when they recorded their minute of the 28th October 1796, on the respective pretensions of the indigo manufacturers of our provinces and those of Oude; but they had received them long before the month of March 1798, when they made a

a representation to the Governor-general in Council, in opposition to his resolution to impose a a duty on indigo passing from Oude to Bengal, which resolution was in conformity to the spirit and tenor of those very advices from us. Yet in that representation they do not enter into any consideration of the statement in question, though we might have expected, that facts and conclusions bearing materially on the subject should have been noticed in the discussion of it, and that when our sentiments, with the reasons for them, were so clearly laid down, pains would have been taken, by a specific answer to them, to explain the grounds in which a line of conduct different to that to which they pointed was maintained.

21. We have often had occasion to express our approbation of the zeal and ability with which the business of our Commercial Board has been long conducted; but though our opinion on that head remains perfectly the same, we feel ourselves unable to acquiesce in all the views and reasonings exhibited in their above-mentioned minute of the 28th October 1796.

22. In discussing the respective pretensions of the manufacturers of Bengal and of Oude, their design undoubtedly was to do justice to both parties, and to consult, on the whole, the promotion of the trade; but they do not seem to be have been sufficiently aware in respect to the last object,

ject, that the *quality* of the indigo sent to this market was a point of decisive importance; neither do they appear to have enough considered the shock with which too precipitate an increase in the quantity here, especially of the lower sorts, might recoil upon the exporters from India. As general propositions, what they urge may indeed be granted, that superiority of quality may enable the owner of it to stand, whilst speculators in inferior qualities are ruined, and that those who make better and cheaper indigo than the Americans, Spaniards, and other rivals, will have the supply of the market.

23. These, as abstract propositions, may on the whole hold true; but they may not hold true in all cases, nor of every individual, when, by a much greater importation than the whole demand requires, there is a general depression of price. The question then will not turn upon quality merely, but upon strength of capital; and perhaps all the individuals concerned may fall in the conflict, a crisis which it cannot be the wish of any administrative body to produce.

24. Neither are we convinced that we are called upon, by justice or by policy, to lay it down as a principle, that countries dependent on us, or in our alliance, should receive the same commercial privileges and encouragements as our own dominions. We think that the utmost we can be required to concede on this head, in the way of a general prin-

ciple,

ciple, is, that a liberal and friendly aid be afforded to the commercial interest of such countries, whenever that aid is not given at the expense of the interests of our own provinces.

25. European skill and enterprise have formed the present indigo manufacture and indigo trade of India. To these, both Oude and Bengal are indebted for the share they possess in the exports of that article, and on these, there seems reason to believe, the trade in both countries will continue to depend. A trade thus raised and supported, greatly to the benefit of those countries, by persons not natives of them, who have a right to be there only by our permission; a trade which, on its present great scale, con be conducted only by shipping employed or licensed by us; a trade, in short, which the Company have fostered at a considerable expense; such a trade we regard as naturally more subject to our direction and modification, than if it had been established by the natives themselves: and this observation, we think, applies still more strongly to the allied country of Oude than to Bengal.

26. In whatever degree, also, the indigo trade of Oude is carried on by the capital of Bengal, that is by advances furnished from thence, so far the Government of Bengal acquires an additional right of interference in this trade; especially if Bengal itself is capable of employing that capital in the indigo manufacture.

27. If

27. If these observations are just with respect to Oude, they will apply with still greater force to countries beyond it, not at all connected with us; whence however we are told, not only that much of the indigo exported by Oude comes, but that the profits on indigo raised in those countries have furnished the funds for paying formidable military levies made in them. As we are certainly under no obligation to augment their manufactures or facilitate their exports, we must think ourselves at liberty to decline measures which would have such effects, even though attended with some intermediate advantage to Oude, if those measures were to interfere with the interests of our own territories.

28. Our leading idea, however, in respect to this important subject, has been, as we have already intimated, to give to British India the supply of indigo for the British market in Europe.

29. It has been supposed, that the provinces strictly called our own could produce enough, not only for this purpose, but for the consumption of all Europe, at east on its present scale, and the supposition appears a very probable one. We conceive that Bengal, Behar, and Benares, may, one year with another, furnish 40,000 maunds, or about three millions of pounds weight; and besides that, it might be natural for us to give those Provinces some preference as far as their capabilities went, for which there may also be just political

tical reasons. We think the manufacture would be more secure in them, and therefore the steadi- 2
ness of the trade with Europe, if once established, less likely to be affected, than if part of the supply depended on countries greatly removed from the sea coast, and more liable to convulsions and disorders, and to other evils flowing from arbitrary government.

30. We say this on the supposition that the produce of our own territories, and of those dependent on us, were alike fit for this market; but if the produce of Oude, for instance, were more fit, and therefore more likely to obtain that prevalence over rivals which would give the supply of the British market to India, we should have no hesitation, in this case, to encourage in preference the indigo of Oude, and leave it to Bengal to arrive at equal goodness of quality, and thereby equal support. But we find the fact to be directly the reverse. It is acknowledged that the quality of the Oude indigo is generally inferior, and not calculated for effecting the great object of giving Asiatic indigo the possession of this market, nor likely to become so, because much of it is manufactured in the slovenly imperfect manner of the natives; which also will prevent it from becoming a formidable article in the hands of foreigners, if it could find its way in any great quantity to the western ports of India, a thing improbable, because the trade seems greatly to owe its existence

to

to the facilities which Bengal affords it; and though it be true, that part of the indigo made in Bengal must necessarily (where the whole produce is so large) be of inferior quality, yet that part may be no more than will suffice to supply the place of other articles, which are used as substitutes for indigo when the price of it is high.

31. Thus all considerations seem to concur in supporting the orders we transmitted to you in our letter of 27th July 1796, for laying a duty on the indigo of Oude coming into our provinces, which orders we now, after mature deliberation, repeat, desiring that it may be such a duty as will tend to discourage the importation from that quarter, and if the impost upon it in the Oude territory should be decreased in consequence of this regulation, that the rate payable at our Custom-house be raised in proportion. We can by no means view such a restriction in the light of a bounty to the indigo of America and other rival countries, as has been suggested, but as a means of more effectually strengthening the opposition against them.

No. 13.

EXTRACT LETTER *from the Court of Directors to the Governor-general in Council, Bengal, dated the 8th September* 1802.

Par. 7. Being of opinion that sufficient pecuniary encouragement has already been given to the merchants at your presidency concerned in the cultivation and manufacture of indigo, and that from the large profit that has arisen from the produce of that commodity at the Company's sales, the merchants may be able, from their own resources, to make the necessary advances for carrying it on, considering also, that the funds that can be spared from the ordinary purposes of your Government will be required for restoring the Company's investment to its former amount, we direct that no further advances be made in aid of the indigo merchants and manufacturers.

No. 14.

Account *of Advances on the Remittance Plan.*

Season.	Current Rupees, at 2*s*. per Current Rupee.	Amount Sterling.
		£.
1786-7	...... 3,22,279	32,228
1787-8	...... 6,70,029	67,003
1788-9	...... 3,58,716	35,872
1789-90	...... 5,09,324	50,932
1790-1	...... 2,46,177	24,618
1791-2	...... 1,94,645	19,464
1792-3	...... 3,74,490	37,449
1793-4	...... 11,03,893	110,389
1794-5	Sa. Rs. 8,79,696, at 16 per cent. better than Current Rupees.	102,045
1795-6	Sa. Rs. 11,82,310	137,148
1796-7	...... 27,027	3,135
1797-8	...... 66,866	7,756
1798-9	...... 2,893	335
1799-1800	....	....
1800-1	....	....
1801-2	Sa. Rs. 10,30,663 at 2*s*. 3*d*. ...	115,950
1802-3	...... 7,25,880	81,661
1803-4	...... 5,92,887	66,700

No. 15.

EXTRACT LETTER *from the Court of Directors to the Governor-general in Council, Bengal, dated the 31st August* 1804.

Par. 155 to 157. Proprietors of Indigo works request the erection of new works within limited distances may be prohibited.

Par. 40. We are aware that the interests of the indigo manufacturers have repeatedly suffered by the indiscreet competition of new adventurers; but we cannot approve the principle of an interference on the part of Government to check such an evil, and think that you did well in refusing your sanction to the proposal of the established manufacturers. Since, however, the inconveniences of which they complain may also have contributed to the repeated calls made on the Company, to relieve the distresses under which this branch of manufacture laboured, we are the more disposed to wish that new enterprizes may be undertaken with prudence, and that the cultivators may avoid collisions, by friendly correspondence among themselves, and by mutually restraining their servants from issuing advances to those ryots who may be under previous engagements.

No. 16.

EXTRACT LETTER *from the Court of Directors to the Governor-general in Council, Bengal, dated the 31st August* 1804.

Par. 9 to 19. Indigo Cultivators solicit assistance. Court's orders of 8th September 1802 to the contrary received. Reasons for making advances during the present season, to the amount of six lacs.

Par. 85. Relying upon the assurances you have given, that this measure will not be repeated, we shall not withhold our sanction to it. We cannot, however, avoid expressing our opinion, that all the points which are referred to in favour of assisting the indigo manufacturers, were equally applicable to the important article of raw-silk, in which our interests were more deeply concerned; and that if, on the one hand, you acted on a sound principle, in declining to restrain the attempts of new adventurers in indigo, it was rather inconsonant to that principle, to advance again the funds of the Company to assist the embarrassments of such adventurers, which, in effect, operated in the nature of a premium in favour of competition.

No. 17.

Extract Letter *from the Court of Directors to the Governor-general in Council, Bengal, dated the 30th July* 1806.

Par. 1. Having seen proper again to advance part of our funds for the provision of an investment of indigo, we direct that three lacs of sicca rupees be set apart for this purpose, out of the allotment to be made for the year 1807; and should there be a sufficiency of funds for the whole indent contained in our letter of the 23d instant, the sum to be invested in indigo may be extended to six lacs of sicca rupees, if there be a well grounded expectation of profit.

2. The funds to be set apart for this purpose are to be invested in purchases of indigo to be made at Calcutta for ready money, on the delivery of the indigo, which must be well examined before the price be settled.

3. In thus buying with ready money, we mean the indigo should be shipped immediately, and in reasonable time of dispatch; but if advantageous offers of sale should be made so late in the season that the purchase must remain in your warehouse till the following seasonable time of dispatch, we shall have no objection to the purchase, provided a proportionate credit be given; or if you can then

then conveniently pay ready money, a discount at the rate of one per cent. a month must be allowed by the vender, and provided you estimate a less price, in proportion to the probable decrease of weight the article may suffer by remaining so long in your warehouse.

6. For the purpose of assisting the judgment of our servants in making their purchases, we transmit in a separate box packet, musters of indigo and the prices in London, and we shall preserve corresponding musters for the sake of reference to the purchases which may be made thereupon, and we shall take care to furnish similar musters as frequently as may be necessary.

11. The manufacturers of indigo, especially the native manufacturers, will, we are satisfied, find it beneficial and encouraging to have a certain ready-money market open to them in Calcutta. We have high expectations of finding this article a source of considerable profit to the Company, and we mean, if our adventures prove successful, and the state of our funds shall admit, greatly to extend our orders for it in future years.

No. 18.

Extract Letter *from the Court of Directors to the Governor-general in Council, Bengal, dated the* 30*th March* 1810.

Par. 10. No method of communicating the price of indigo can be so clear as by the transmission of samples: but we are precluded from this mode of proceeding by the length of time since our sale in October, and the smallness of the quantity then offered not having been sufficient to give that sale a decided character. To remedy this inconvenience, we now transmit in the packet a box of musters of indigo under the four principal qualities, *viz.* blue, purple, violet, and copper, which those samples will distinctly show, with the current value of each species this day in London (19th March 1810):—

		s.	d.
A.—Blue	worth, per lb.	10	0
B.—Purple	„	9	0
C.—Violet	„	7	6
D.—Copper	„	5	6

But it is to be understood that from the above four principal qualities of indigo the assortments converge into each other, *viz.*:—

	s.	d.
Blue, worth as above, per lb.	10	0
Blue and violet	9	6
Purple	9	0

Purple

	s.	d.
Purple and violet, worth per lb.	8	0
Violet	7	6
Coppery violet	6	6
Violety copper	6	0
Copper	5	6

and that the broken indigo of the above qualities will sell for one shilling to eighteen-pence per pound lower than the above prices, which are for indigo of perfect shape. Inferior indigo of the fifth sample now sent, although in perfect cakes, are not worth more than from two to four shillings per pound at the present time.

11. The total quantities of indigo which have been sold at our sales in the last three years are as follows:

				s.	d.
March sale 1807 ...	2,022,113,	at an average of		8	6
September „ ...	3,091,202,		ditto	6	6
March 1808 ...	2,652,428,		ditto	5	6
September „ ...	(None arrived in time)				
March 1809 ...	3,995,191,		ditto	4	7
Ditto Company's ...	280,502,		ditto	5	6
September sale ...	371,370,		ditto	4	6
Ditto Company's ...	98,894,		ditto	5	11

The general average of all which is 5s. 11d. per pound; and as the above term comprises a period when the markets were favourable, as well as one in which they were adverse, it may be considered as a fair general average.

No. 19.

Extract Letter *from the Court of Directors to the Governor-general in Council, Bengal, dated the 6th June* 1810.

Par. 2. We propose in the following paragraphs, to communicate to you several particulars of practical information respecting the article of indigo, which will be of great use in assisting the judgment of your officers who superintend the detail of your annual purchases.

3. In order to make your purchases of indigo with the greatest advantage, it will be necessary to pay attention to the prejudices of the London market, as well as to select the most approved descriptions. Before we proceed to any observations respecting the best qualities of indigo, we shall notice such of the prejudices as we think most material; and in the packet of the ship *Lord Keith* will be found musters of each description of indigo referred to in our present despatch.

1st. *Shape.*

Great preference is given to indigo of the square shape and size, which you will observe on referring to the wooden sample marked A.

4. The merchants who buy for exportation to the Continent, will give at least ninepence to one shilling per pound more for indigo of this shape than for large or small broken, although of equal quality.

quality. This size is also preferred to the flat shape (as the sample marked B) at least fourpence to sixpence per pound, and the thin flat shape (such as the sample marked C) is to be avoided when the former sizes can be procured.

5. Of the broken indigo the largest sizes are preferred, in proportion as they retain more of their original square shape.

2d. *Coat or outside.*

Those indigos which have a whitish coat are much preferred; the dark clay-coloured coat is not approved; and a considerable reduction in price is made for indigo which has a thick mossy surface. We have sent specimens of the different descriptions of coats. Samples G, H, and I are of the whitish kind so much preferred; sample Q is of the dark clay-coloured; and the sample D is of the thick mossy sort, which last will not sell for so much by one shilling per pound as it would have done had it a coat of the first description, or ninepence per pound of the second, in indigo of equal quality. The white-coated grab, or small broken indigo, is principally bought by the home consumers, as the merchants object to export it; and as four-fifths of the indigo is exported, of course the principal object is to consult the views of the shipper.

3d. *Limy.*

The buyers do not like those indigoes which break limy or specky. Although the quality may

not

not be injured by it, still a clean texture is to be preferred. A specimen of what is called limy, is, sample E.

4th. *Veiny or Streaky.*

This indigo is to be avoided. There exists a great prejudice against it, and it always sells low, compared with other kinds. We have given a specimen in sample F.

6. We shall now proceed to consider the different qualities, which are worth this day at our sales as follows:

			s.	d.	
Fine blue, vide sample		G, ...	13	6	per lb.
Purple	„	H, ...	11	0	„
Violet	„	I, ...	10	0	„
Red violet	„	K, ...	8	9	„
Copper	„	L, ...	7	9	„
Pale blue	„	M, ...	6	3	„
Purple	„	N, ...	5	9	„
Weak violet		O, ...	7	6	„
Dull ditto	„	P, ...	6	9	to 7 3

7. In selecting the fine blue, purple, and violet indigo, the greatest care should be taken to avoid their being mixed with pale. In the conversations we have had with persons from India, who from being manufacturers of, and dealers in this article, should be well acquainted with it, we have invariably observed a great want of attention to this particular, which is very essential, as pale indigo is disliked more than any other kind, and always sells low at our sales. We have selected two samples of this description, marked M and N, the inferiority

inferiority of which will be apparent, if they be contrasted with any of the samples of good indigo. Indigo which is in any degree mixed with weak, or, as they are most commonly called, milky stones, will sell at low prices, for the following reasons:—the exporters will not buy it, and it is not sufficiently strong for the purpose of dyeing woollens, which is the principal consumption of indigo in Great Britain. From a want of proper information on this head, it has been stated by a very respectable house here, that the indigo marked G and that marked N were exposed for sale to the Company at Calcutta at the same time, and the difference of price asked was only equal to threepence per pound. The indigo marked N was taken, which in this market is worth about 5s. 9d. per lb.; and that marked G, one chest of which has been sold at the sale for 13s. 6d., was rejected: but it is to be remarked, that the average sale price of the lowest parcel was 7s. 1d. per lb. Fine indigo should be light, tender, clean-textured, rather of a red (but not a coppery) hue, which the buyers here term strength. We have also specimens of dull purple (sample N), and likewise of dull violet (sample P), which will not suit this market, as they produce very low prices. All mixed indigos should be avoided; by which we mean, when there is to be found in the same chest indigo of good, weak, and dull kinds. Good purple and violet may be altogether, and so may good violet

violet and copper, but good mixed with inferior will not do: and for this reason, it is the practice of the buyers, when they see inferior indigo in a chest, even though there be a very small proportion, to value it as it were two-thirds inferior and only one-third good.

8. The description of violet may be divided into two samples: I, at present worth 10s., and sample K, worth 8s. 9d. per lb. which is called red violet, and sells readily. Copper is also of two descriptions: red copper (sample L), 7s. 9d., and middling copper (sample Q) at 6s. 3d. The latter is too often mixed with sand, as are sometimes the violet and purple. Any appearance of sand injures the sale. We have sent you specimens of sandy purple in sample R; of sandy violet, in sample marked S; and of sandy copper in sample marked T. When trade is dull these kinds will not sell at all, or at least but for very low prices. You will observe, in our valuations of the samples, the great difference between inferior, middling, and red copper.

9. It must, however, be observed, that the sample marked G was the very finest indigo in the present sale, which consists of 12,789 chests; and of this excellent quality the number was only one hundred and twenty-two chests.

10. There have been sold at our present sales about 9,000 chests (up to the 29th May 1810), of which number fourteen chests have sold for upwards

wards of thirteen shillings per pound, being of the mark of H ◇ A, which we understand was refused by our Board of Trade at 160 rupees per maund, and the average price of that parcel has been 10s. 9d. per pound.* But the present high prices (which are alone referred to in our present despatch) are beyond what could have possibly been expected, and upon the whole we are satisfied, from the parcels we have received, that the purchases of indigo in the season 1808-9 were made with judgment, and had it not been for the calamities which have befallen our ships, would have produced a considerable profit at our sales, as we have no doubt the whole would have proved equally well selected.

No. 20.

EXTRACT LETTER *from the Court of Directors to the Governor-general in Council, Bengal, dated 20th June*, 1810.

Par. 74. In the culture of the indigo-plant it is liable to droughts and inundations, which affect its produce: from these circumstances and others in the state of the markets at home, the selling price here must be subject to variations. The cultivation

* *Note.*—See the Tender of your purchases, 1808–9.

cultivation also may be carried too far, and occasion for a time considerable inconvenience; but this is an evil that may be expected in the end to work its own cure; and though, for these several causes, individuals may no doubt suffer, yet, speaking generally, the article appears to be established as a great staple of Bengal. It supplies much of the consumption of Europe, and no rival to it seems likely to arise; it will therefore probably continue to be largely in demand, and may be fairly reckoned on as a considerable medium for remittance to England. The prices fell in our sales of last year, but in the present (as you have been informed from our Commercial Department) have been run up unusually high.

No. 21.

EXTRACT LETTER *from the Court of Directors to the Governor-general in Council, Bengal, dated the 10th April* 1814.

Par. 17. The provision of indigo in Calcutta by ready-money purchases, is found by experience not to be a fit mode of procuring the Company's investment of that article, as it failed altogether in the season 1809-10, although the Company's limit of price was liberal; and it appears that no purchases could be effected in the season

1810

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181

1810-11, up to the date of the last despatches from Bengal.

18. In order, therefore, to secure an investment of indigo at reasonable prices, it appears proper that advances of cash should be made under contracts to the manufacturers, agreeably to the plan which is contained in your letter of the 25th May 1810, upon musters previously fixed; and it is essential that the whole of the transactions with the manufacturers shall be concluded and settled in Calcutta, the profit or loss on the sales in England being wholly at the risk of the Company.

19. We also consider that, although it is a desirable object, as well with the view to a remittance to Europe as to the general magnitude of the Company's commerce, that the Company should take a considerable share of the trade in indigo if they engage in it at all, yet it is by no means expedient that the cultivation of indigo should at this time be materially extended, by the erection of new factories, or indeed by any measure which may force an unusual production at the factories now in existence.

20. And we have resolved that, on a supposition that the actual value, in Calcutta, of all the indigo which is annually shipped for London, may amount on the average to seventy-six lacks of sicca rupees, it is our opinion that the Company's advances should be equal to one-fourth part of the whole export to London, and therefore that the sum which it may be proper to invest in a provi-

sion

sion of indigo, by way of advances to the manufacturers in the year 1812 (to be shipped in 10
1812-13) should be limited to twenty lacks of sicca rupees, which sum is to be continued in future seasons, until a further view of the subject shall render a revision of the amount advisable.

21. It is expedient that your attention should be directed to the encouragement of the native growers of indigo, being proprietors of factories, by issuing advances to them in common with European manufacturers, taking care that the security be sufficiently respectable; as we fully concur in the opinion of our Board of Trade, expressed in their minute of the 28th October 1796, that the cultivation of indigo cannot be considered as decidedly established in Bengal, until the natives shall chiefly manufacture it of a quality fit for the Europe market.

24. Upon a general view of the present appearance of the state of the indigo trade, we concur in your decision, that it is not advisable to establish indigo factories upon our account in the territories under the authority of the Madras Government; for our apprehension, that the market in Europe will be liable to be overstocked by the Bengal produce, operates as more than a counterpoise to the abstract principle which would otherwise govern our decision, *viz.* that it is our duty to promote new branches of trade in any of our settlements to which the soil and climate may appear favourable.

No. 22.

Account of Indigo exported from Calcutta in the following Years.

Exported to	1805-6.		1806-7.		1807-8.	
	Number of Chests.	Value in Sa. Rs.	Number of Chests.	Value in Sa. Rs.	Number of Chests.	Value in Sa. Rs.
London, On account of the Company.........	—	—	—	—	Packages 1,575	9,82,143
On account of Individuals	13,486	45,23,124	17,542	59,31,390	19,452	72,07,505
Total to London...	13,486	45,23,124	17,542	59,31,390	21,027	81,89,648
Copenhagen, in sundry places via Serampore	—	—	559	1,92,531	513	2,05,830
Lisbon..............	437	1,52,227	28	9,171	781	2,77,410
Total Foreign Europe..............	437	1,52,227	587	2,01,702	1,294	4,83,240
America	477	2,13,890	1,548	4,97,456	3,257	11,15,068

Shipped for London, viz.

In 1805-6,	Chests 13,486,	value Sa. Rs.	45,23,124		
1806-7	„ 17,542	„ „	59,31,390		
1807-8	„ 21,027	„ „	81,89,648		
Total of 3 years	52,055	„ „	1,86,44,162		
Average	17,352	„ „	62,14,720		

Which, estimating the chests at three maunds and a half each, gives the official value of the whole quantity at Sicca Rupees 100 per maund. The real value, however, cannot be taken at less than Sa. Rs. 125 per maund, which causes the amount of the Indigo shipped to London, as above, to be nearly 76 lacks of rupees annually, or, at 2s. 6d. the rupee, £950,000.

Persian and Arabian Gulphs ...	663	2,00,806	1,566	4,41,981	1,507	5,29,715
Isle of France	—	—	262	79,556	148	37,690
Coast of Malabar	318	1,01,422	139	52,154	19	7,561
Coast of Coromandel	—	—	100	32,464	Boxes 12	3,450
Coast of Sumatra...	2	700	—	—	—	—
Ceylon...............	—	—	4	1,300	—	—
Penang and the Eastward.........	2	605	1	285	45	11,796
Total various places in Asia and Africa	985	3,03,533	2,072	6,07,740	1,731	5,90,212
Total, all parts ...	15,385	51,92,774	21,749	72,38,288	27,309	1,03,78,168

No. 23.

Extract Letter *from the Court of Directors to the Governor-general in Council, Bengal, dated the 7th June* 1826.

Par. 2. We have noticed that the draft of the advertisement, as proposed by the Board of Trade, differed from former practice, by limiting their intended purchases to indigo manufactured in the Lower Provinces; and we approve of your having, in your letter to the Board of Trade of the 24th of November 1825, directed the usual form of advertisement to be continued. We entirely concur in your observation, that there is not any good reason for excluding western indigo from the invitation, if it be equal to the fixed standards; and should it be bad, the tender will, of course, be rejected. And we take this opportunity of noticing, that the western indigo is liable to greater loss of weight by wastage than that of the lower provinces, owing, as we understand, to the haste with which it is packed up, in order to its arrival at Calcutta in the usual shipping season. This is a point for the practical application of your officers who superintend the purchases.

AN ACCOUNT

OF THE

WEIGHT OF INDIGO,

With the Average Prices, sold from March Sale 1790, to September Sale 1806.

No. 24.

An Account of the Weight of Indigo, with the Average Prices, sold from March Sale 1790 *to September Sale* 1806.

	Provided with Company's Advances.		Privilege.		Private Trade.		Total.
	lbs.	Average Prices Sold.	lbs.	Average Prices Sold.	lbs.	Average Prices Sold.	lbs.
1790		s. d.		s. d.		s. d.	
March 2	174,095	4 1	—	—	—		174,095
July 9	20,090	4 1	—	—	5,344	1 4	25,434
Sept. 2	104,716	4 8	4,800	4 7	121,845	5 0	231,361
1791.							
Feb. 1	—		—		103,571	5 11	103,571
	298,901		4,800		230,760		534,461

March 2.	125,980	6	8	—			—			125,980
July 27............	—	—		—			3,607	6	2	3,607
October 4..........	177,150	7	9	—			—			177,150
— 28.	—			60,330	7	10	114,838			175,168
1792.										
January 26.	—			22,051	7	2	55,353			77,404
	303,130			82,381			173,798			559,309
March 1.	43,515	7	10	—			—			43,515
August 23.	—			6,485	6	4	169,209	7	6	175,694
— 24.	16,382	6	0	—			—			16,382
Nov. 13.	105,133	7	1	—			—			105,133
Dec. 6	—			12,579	7	4	156,429	6	9	169,008
	165,030			19,064			325,638			509,732

(*continued*).

An Account *of the Weight of Indigo, &c.—continued.*

	Provided with Company's Advances.		Privilege.		Private Trade.		Total.
	lbs.	Average Prices Sold.	lbs.	Average Prices Sold.	lbs.	Average Prices Sold.	lbs.
1793.		*s.* *d.*		*s.* *d.*		*s.* *d.*	
March 6.	15,030	7 8	7,997	9 4	52,733	7 8	75,760
June 6	—		4,042	4 4	58,303	5 10	62,345
Sept. 6	28,029	7 9	20,735	7 9	62,411	7 8	111,175
Nov. 26	—		7,903	5 6	102,337	7 6	110,240
1794.							
January 7	150,738	7 0	225,534	7 0	263,373	5 9	639,645
	193,797		266,211		539,157		999,165

July 9	88,139	6	7	—	—		96,268	6	2	184,407
October 10	—			323,693	6	6	349,994	6	4	673,687
December 30	—			422	8	9	—			422
	88,139			324,115			446,262			858,516
1795.										
March 3	—			—			146,604	5	11	146,604
April 9	359,454	5	11	66,695	4	6	—			426,149
October 20	61,842	4	10	379,668	5	9	413,182	4	9	854,692
1796.										
February 11	243,968	4	3	564,849	3	11	391,932	3	1	1,200,749
	665,264			1,011,212			951,718			2,628,194

(continued).

An Account of the Weight of Indigo, &c.—continued.

	Provided with Company's Advances.		Privilege.		Private Trade.		Total.
	lbs.	Average Prices Sold.	lbs.	Average Prices Sold.	lbs.	Average Prices Sold.	lbs.
1796.		s. d.		s. d.		s. d.	
June 20............	224,322	3 4	585,375	3 6	360,778	3 5	1,170,475
September 8........	2,017	5 0	197,701	4 4	—		199,718
November 10........	155,683	2 7	791,466	3 3	480,382	3 7	1,427,531
	382,022		1,574,542		841,160		2,797,724
1797.							
April 19............	—		1,009,714	4 0	493,959	4 4	1,503,673
July 18............	545,793	4 8	155,233	4 6	141,478	4 7	842,504

October 3.	—			102,240	6	7	2,821	7	5	105,061
November 15.......	—			5,301	3	11	—			5,301
— 21.	—			9,526	5	11	—			9,526
1798.										
February 28........	—			44,800	3	2	—			44,800
	545,793			1,326,814			638,258			2,510,865
March 8.	76,430	5	0	669,448	6	0	296,804	5	9	1,042,682
April 21.	—			140,000	4	1	—			140,000
June 12.	—			558,735	4	10	295,270	4	11	854,005
October 5..........	44,368	4	5	255,648	5	0	454,227	4	8	754,243
November 16.......	—			56,672	3	9	—			56,672
	120,798			1,680,503			1,046,301			2,847,602

(continued).

AN ACCOUNT *of the Weight of Indigo, &c.—continued.*

	Provided with Company's Advances.		Privilege.		Private Trade.		Total.
	lbs.	Average Prices Sold.	lbs.	Average Prices Sold.	lbs.	Average Prices Sold.	lbs.
1799.		s. d.		s. d.		s. d.	
March 11..........	225	3 7	395,563	5 2	570,245	4 6	966,033
April 29...........	—		158,942	4 2	—	—	158,942
June 5............	23,527	4 0	1,682,367	4 5	169,674	4 5	1,875,568
October 10.........	3,948	2 10	970,021	4 7	322,065	4 6	1,296,034
1800.							
January 2	—	—	215,247	4 8	—	—	215,247
	27,700		3,422,140		1,061,984		4,511,824

April 28.	—	—	32,137	8	2	118,601	6	3	150,738
July 30.	—	—	476,307	6	4	186,375	5	11	662,682
October 3.	—	—	—	—		210,657	6	5	210,657
1801.									
February 6.	—	—	1,005,048	6	6	392,613	6	2	1,397,661
	—		1,513,492			908,246			2,421,738
July 13.	—	—	409,814	7	5	3,957	6	6	413,771
September 21.	—	—	100,027	8	6	200,586	8	5	300,613
November 25.	—	—	58,399	7	0	—	—		58,399
1802.									
February 11.	—	—	1,092,317	7	7	221,034	8	2	1,313,351
	—		1,660,557			425,557			2,086,134

(*continued*).

An Account *of the Weight of Indigo, &c.—continued.*

	Provided with Company's Advances.		Privilege.		Private Trade.		Total.
	lbs.	Average Prices Sold.	lbs.	Average Prices Sold.	lbs.	Average Prices Sold.	lbs.
1805.		*s.* *d.*		*s.* *d.*		*s.* *d.*	
May 9............	65,645	9 8	943,779	8 0	174,541	8 2	1,183,965
1806.							
February 11........	—	—	1,359,198	7 9	{ 883,813	8 2 }	2,298,628
					{ 55,617	7 0 }	
	65,645		2,302,977		1,113,971		3,482,593

No. 25.

Extract Letter *from the Court of Directors to to the Governor in Council, Madras, dated the 6th May* 1791.

Par. 7. We approve of the trials you have ordered to be made of the indigo-seed sent you from Bombay in consequence of our former orders: you will of course, at a proper time, report to us the result of the experiment. With respect to the specimen you have lately sent of a new sort of indigo, referred to in the forty-second paragraph of the letter to which we are now replying, we shall cause a trial to be made thereof, and acquaint you with the result by a future opportunity. Lette Mad 6 May

71. The box of nerium indigo, by the same conveyance, has been inspected by an eminent broker, who has affixed the following valuation upon each separate sample.

		s.	d.
No. 1	at	3	6 per lb.
2		4	9 to 5 0
A. 2		5	9
3		4	3
B. 1		6	3 to 6 6
2		5	6
No mark No. 1		7	3
4		4	6
5		3	3
6		2	9 to 3 0

No.

No. 26.

EXTRACT LETTER *from the Court of Directors to the Governor in Council, Madras, dated the* 30*th May* 1792.

Par. 5. We approve of the encouragement that has been held out to the cultivators and manufacturers of indigo, by your resolutions for remitting the usual duty on indigo brought into Madras for the purpose of exportation to England. As a further encouragement, we have consented to a remission of two and a half of the five per cent. levied at home, under the usual name of the Company's duty.

6. With respect to the indigo sent home on account of Messrs. Roebuck and Abbott, and Mr. Andrew Ross, we enclose (a number in the packet) an account of its produce at our sales, from which those gentlemen will be enabled to determine how far it is likely to answer their expectations.

No. 27.

EXTRACT LETTER *from the Court of Directors to the Governor in Council, Madras, dated the* 8*th July* 1795.

Par. 3. We approve of the encouragement given for the cultivation and manufacture of indigo,

indigo, agreeably to our orders of the 30th May 1792, as stated in this and in your subsequent despatch of the 3d May 1793.

No. 28.

EXTRACT LETTER *from the Court of Directors to the Governor in Council, Madras, dated the 2d March* 1798.

We rely on the continuance of your endeavours, and those of the Revenue Board and Collectors, for inducing the natives to undertake the culture of indigo, cotton, and sugar, under every reasonable degree of encouragement.

No. 29.

EXTRACT LETTER *from the Court of Directors to the Governor in Council, Madras, dated the 7th April* 1807.

Par. 46. We see no objection to allow Europeans to rent lands, under certain restrictions, for the cultivation of coffee, or any other species of produce which is likely to prove an useful article of commerce, provided Government be not at all engaged in the speculation, either by advances of money or otherwise: we therefore approve of the privilege

privilege granted to Mr. C. W. Young, on condition that the proposed undertaking is to be prosecuted entirely at his own risk.

No. 30.

Extract Letter *from the Court of Directors to the Governor in Council, Madras, dated the 7th September* 1808.

Par. 25. We have permitted Mr. John Smith to proceed to Madras, for the express purpose of assisting Mr. Edward Campbell, now in India, in the indigo and sugar-works established by the latter gentleman at your Presidency. Mr. Smith is to be restricted from engaging in any other concerns whatever.

No. 31.

Extract Letter *from the Governor in Council at Madras to the Court of Directors, dated the 3d March* 1809.

Par. 18. The capacity of these provinces to produce indigo is such, that there is always ground to apprehend that the manufacture will be extended far beyond the ordinary consumption and demand, and we shall therefore feel it incumbent

upon us to act with extreme caution in making our purchases of indigo, when we may not be under particular orders from your Honourable Court, or be in possession of information which would fully justify the exercise of a discretion with respect to the extension of your investment in this article.

19. The last season was by no means favourable to the cultivation of indigo; but your Honourable Court will have observed from the report of the Sub-Export Warehouse-keeper, a copy of which was forwarded per *Bengal*, enclosed in a letter from our Secretary bearing date the 20th January last, that in consequence of an increase of cultivation and the establishment of factories, a very large quantity was produced under every disadvantage of season, and the manufacture has been pursued of late with such avidity, that there is reason to apprehend the produce, during a favourable season, would far exceed the ordinary demand for the article.

No. 32.

EXTRACT LETTER *from the Governor in Council at Madras to the Court of Directors, dated the 6th December* 1811.

Par. 6. The attention of the Board has been directed to give encouragement to the native growers